# ENVIRONMENTAL IMPACT STATEMENT
## FOR THE
# PROPOSED REVISION TO THE NONESSENTIAL EXPERIMENTAL POPULATION
## OF THE
# MEXICAN WOLF (*CANIS LUPUS BAILEYI*)
## AND THE
# IMPLEMENTATION OF A MANAGEMENT PLAN

## PRELIMINARY DRAFT

## CHAPTER 1 AND 2

## 02 AUGUST 2013


**PREPARED BY:**

**U.S. FISH AND WILDLIFE SERVICE**

**SOUTHWESTERN REGIONAL OFFICE**

**MEXICAN WOLF RECOVERY PROGRAM**

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The documents are available on the USFWS Ecological Services Field Office, Mexican Wolf Recovery website: http://www.fws.gov/southwest/es/mexicanwolf/documents.shtml

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| | |
|---|---|
| 3-Year Review | Mexican Wolf Recovery: Three Year Program Review and Assessment |
| 5-Year Review | Mexican Wolf Blue Range Reintroduction Project 5-Year Review |
| AGFD | Arizona Game and Fish Department |
| AMOC | Adaptive Management Oversight Committee |
| AMOC and IFT | Adaptive Management Oversight Committee and Interagency Field Team, commonly used as a literature citation referencing these committees as authors of sections of the 5-Year Review, including the Technical Component (TC), Administrative Component (AC), or AMOC Recommendations Component (ARC) |
| AMWG | Adaptive Management Working Group |
| APA | Administrative Procedures Act of 1946 |
| AZA | Association of Zoos and Aquariums |
| BAE | Biological Assessment and Evaluation |
| BRWRA | Blue Range Wolf Recovery Area, as designated by the Final Rule (50 CFR 17.84(k)) |
| BNP | Banff National Park |
| CEQ | Council on Environmental Quality |
| DPS | Distinct Population Segment |
| DOA | Department of Agriculture |
| DOD | Department of Defense |
| DOI | Department of Interior |
| EPA | U.S. Environmental Protection Agency |
| FEIS | Final Environmental Impact Statement |
| ESA | Endangered Species Act of 1973, as amended |
| FAIR | Fort Apache Indian Reservation of the White Mountain Apache Tribe |
| Final Rule | Final "nonessential experimental population" or "10(j)" rule of1998 for Mexican wolf reintroduction in Arizona and New Mexico, 50 CFR 17.84(k) |
| Great Lakes | USFWS gray wolf recovery program administered out of the Great Lakes, Big Rivers Region (Region 3) |
| GMU | Game Management Unit |
| GYA | Greater Yellowstone Area |
| IFT | Interagency Field Team (for the Reintroduction Project, see below) |
| LRMP | Land and Resource Management Plan |
| MVP | Minimum Viable Population |
| MWEPA | Mexican Wolf Experimental Population Area |

| | |
|---|---|
| MWRP | Mexican Wolf Recovery Program |
| NEP | Non-essential Experimental Population |
| NEPA | National Environmental Policy Act of 1969 |
| NFMA | National Forest Management Act |
| NMDGF | New Mexico Department of Game and Fish |
| NRM DPS | Northern Rocky Mountain Distinct Population Segment |
| Northern Rockies | USFWS gray wolf recovery program administered out of the Mountain-Prairie Region (Region 6) and Pacific Region (Region 1) |
| PVA | Population Viability Analysis |
| SOP | Standard Operating Procedure for the Reintroduction Project |
| SSP | Species Survival Program |
| SWDPS | Southwestern Gray Wolf Distinct Population Segment |
| SWDPS Recovery Team | Southwestern Gray Wolf Distinct Population Segment (with emphasis on the Mexican gray wolf, *Canis lupus baileyi*) Recovery Team |
| USDA | U.S. Department of Agriculture |
| USDA Forest Service | U.S. Department of Agriculture, Forest Service |
| USDA-WS | US Department of Agriculture-Animal Plant Health Inspection Service, Wildlife Services |
| USFWS or Service | United States Fish and Wildlife Service |
| WMAT | White Mountain Apache Tribe |
| YNP | Yellowstone National Park |

## DEFINITIONS

Agent/Designated Agent – Individuals that are designated through a: (1) Service Section 10 (a)1(A) permit, (2) Section 6 Agreement, or (3) a Service-Approved Management Plan, based, in part, on their training and technical expertise with respect to wolf reintroduction, monitoring, management, care and handling.

Authorized Agencies/personnel – Agencies and their employees that are designated through a (1) Service Section 10 (a)1(A) permit, (2) Section 6 Agreement, or (3) a Service-Approved Management Plan, based, in part, on their training and technical expertise with respect to wolf reintroduction, monitoring, management, care and handling.

Aversive Conditioning -The use of some noxious or punishing stimuli on problem wolves to modify or stop undesirable behaviors, such as: (1) depredation on domestic livestock, (2) displaying fearless behavior of humans, or (3) interacting with other domestic animals or pets (i.e., dogs or cats).

Depredation - The confirmed killing of lawfully present domestic livestock by one or more wolves. The Service, USDA Wildlife Services (WS), or other Service-authorized agencies confirm cases of wolf depredation on domestic livestock (see Appendix I).

Depredation Incident - The aggregate number of livestock killed or mortally wounded by an individual wolf or a single pack of wolves at a single location within a 1-day (24-hour) period, beginning with the first confirmed kill, as documented in the initial incident investigation pursuant to Appendix I. Note: in some situations, dead or mortally wounded livestock may be discovered during management follow-up in an incident area that were not counted in the original depredation incident. Field personnel and the permittee or landowner will discuss and the field personnel must determine whether such animals represent an additional incident or should be included in the earlier incident

Federal Land - Federally managed lands.

Hard Release - The transport and immediate release of wolves at an appropriate site.

Lawfully Present Livestock - Livestock (cattle, sheep, horses, mules, and burros) occurring on private lands or on legal allotments (not trespassing) on Federal lands.

Livestock - cattle, sheep, horses, mules, burros, llama, and alpaca's, or other domestic animals defined as livestock in State and Tribal wolf management plans approved by the Service.

Management Actions - (a) application of aversive conditioning techniques to problem wolves; (b) capturing wolves on Federal, State, Tribal, or private lands, radio tagging and releasing them on site; (c) translocating wolves to remote areas; or (d) placing wolves in captivity.

Management Agency - A Federal or State or Tribal agency permitted by the Service under Section 10 of the ESA to conduct wolf management actions.

Nuisance Activity/Behavior/Scenario - Refers to a wolf or wolves that display a lack of avoidance of humans or their residences. The definition for nuisance activity/behavior by wolves is potentially quite broad. However, a wolf passing by a residence at night without being observed is generally not considered a nuisance scenario, while a wolf that does not move away from humans during a close encounter is clearly a nuisance scenario. In between these two examples lies a large gray area that requires the professional judgment of Management Agency employees based on reported behavior,

evidence at the scene (i.e., tracks, scats, and telemetry locations), and the past behavior of the wolf or wolves.

Pack - A group (≥ 3) of wolves, usually consisting of a breeding male, female, and any number of their offspring.

Pets - Any domestic animal (other than cattle, sheep, horses, mules, burros, llamas, and alpacas) that could be killed or maimed by wolves that are lawfully present on Federal, State, or private land, excluding feral animals.

Problem Wolves - Wolves that: (1) have depredated on lawfully present domestic livestock two times in an area (200 square miles (e.g., a packs territory)) within six months, (2) are members of a pack (including adults, yearlings, and young-of-the-year greater than six months of age) that were directly involved in livestock depredations two times in area (200 square miles (e.g. a packs territory)) within six months, (3) have depredated domestic animals or pets other than livestock on private or tribal lands, two times in an area (200 square miles (e.g., a packs territory)) within six months, or (4) are habituated to humans, human residences, or other facilities.

Removal - Capture and placement in captivity or translocation of problem wolves.

Soft Releases - When wolves are placed in an acclimation pen (constructed of chain link or mesh material) and held for a period and then released on site.

Take - To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to engage in any such conduct (16 U.S.C 1532 et. seq.).

Translocation - Capturing, affixing a radio collar, and moving wolves from one site to another where they are 'hard' or 'soft' released

# 1 INTRODUCTION, PURPOSE AND NEED FOR ACTION

This Environmental Impact Statement (EIS) has been prepared by the Department of Interior, United States Fish and Wildlife Service in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C] § 4321 et seq.); the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (Title 40 Code of Federal Regulations [C.F.R.] §§ 1500-1508); DOI Regulations, (43 CFR Part 46 61292), U.S. Fish and Wildlife Service (USFWS) 550 FW 1 Draft Fish and Wild Service NEPA Reference Handbook (USFWS 2013) and other applicable USFWS guidance and instructions. The NEPA process is intended to help public officials make decisions based on the understanding of environmental consequences, and to take actions that protect, restore, and enhance the environment.

## 1.1 INTRODUCTION

The Mexican wolf (*Canis lupus baileyi*) (also known as the Mexican gray wolf) is listed as an endangered species protected by the Endangered Species Act of 1973, as amended (ESA, the Act). Efforts to reestablish the Mexican wolf in the wild are being conducted in both the United States and Mexico. In the United States the U.S. Fish and Wildlife Service (USFWS, we, us, the Service) is the Federal agency responsible for the recovery of the Mexican wolf. Under section 10(j) of the Act and our regulations at 50 CFR 17.81, the Service may designate a population of endangered or threatened species that has been or will be released into suitable habitat outside the species' current natural range as an experimental population. We established regulations for the experimental population of Mexican wolves in our Final 10 (j) Rule entitled "*Establishment of a Nonessential Experimental Population of the Mexican Gray Wolf in Arizona and New Mexico*" (1998 Final Rule).

In 1998 we began reintroducing captive-bred Mexican wolves into wild in the Blue Range Wolf Recovery Area (BRWRA) in Arizona and New Mexico as part of our strategy to recover the Mexican wolf. The BRWRA is part of the larger Mexican Wolf Experimental Population Area (MWEPA). The BRWRA consists of the entire Gila and Apache National Forests in east-central Arizona and west-central New Mexico. The MWEPA is a larger area surrounding the BRWRA that extends from Interstate Highway 10 to Interstate Highway 40 across Arizona and New Mexico and a small portion of Texas north of U.S. Highway 62/180 (63 FR 1752; January 12, 1998).

The Service intends to revise the existing regulations established in our 1998 Final Rule for the nonessential experimental population designation of the Mexican wolf. We also propose to implement a management plan for Mexican wolves that are not part of the experimental population. In this Environmental Impact Statement we analyze the environmental consequences of a range of alternatives, including the Proposed Action and No Action alternative, for our proposal to: (1) modify the geographic boundaries established for the Mexican wolf reintroduction in the 1998 Final Rule; (2) modify the management regulations established in the 1998 Final Rule which govern the release, translocation, natural dispersal, and take (see the definition of "take" provided in the List of Definitions) of Mexican wolves, and: (3) implement a management plan for Mexican wolves for those areas of Arizona and New Mexico that are external to the MWEPA. These actions would be implemented through a Final Nonessential Experimental Rule (see Appendix B for proposed rule), an Endangered Species Act (ESA) Section 10 (a)(1)(a) research and recovery permit, and/or provisions for federal funding.

### 1.1.1 Regulatory Background

The Mexican wolf was listed as an endangered subspecies (*Canis lupus baileyi*) on April 28, 1976 (41 FR 17740). The entire gray wolf species (*Canis lupus)* in North America south of Canada was listed as endangered on March 9, 1978, except in Minnesota where it was listed as threatened (43 FR 9607). Although this listing of the gray wolf species subsumed the previous Mexican wolf subspecies listing, the

rule stated that the USFWS would continue to recognize the Mexican wolf as a valid biological subspecies for purposes of research and conservation (43 FR 9607). On August 4, 2010, we published a 90-day finding on two petitions to list the Mexican wolf as an endangered subspecies with critical habitat (75 FR 46894). In the 90-day finding, we determined that the petitions presented substantial scientific information that the Mexican wolf may warrant reclassification as a subspecies or Distinct Population Segment (DPS). As a result of this finding, we initiated a status review. On October 9, 2012, we published our 12-month finding in the Federal Register (77 FR 61375) stating that the listing of the Mexican wolf as a subspecies or DPS was not warranted at that time because Mexican wolves already receive the protections of the Act under the species-level gray wolf listing of 1978. During 2011 and 2012, we conducted a 5-year review of the gray wolf finding that the entity currently described on the List of Endangered and Threatened Wildlife should be revised to reflect the distribution and status of gray wolf populations in the lower 48 States and Mexico by removing all areas currently included in its range, as described in the CFR, except where there is a valid species, subspecies, or DPS that is threatened or endangered (USFWS 2012).

On June 13, 2013 we published a Proposed Rule (*Proposed Revision to the Nonessential Experimental Population of the Mexican Wolf*, 78 FR 35719) for the Mexican wolf nonessential experimental population in Arizona and New Mexico. This action was taken in coordination with our proposed rule, published on the same date in the Federal Register**,** to list the Mexican wolf as an endangered subspecies and delist the gray wolf [*Removing the Gray Wolf (Canis lupus) From the List of Endangered and Threatened Wildlife and Maintaining Protections for the Mexican Wolf (Canis lupus baileyi) by Listing It as Endangered (*78 FR 35664)]. We published the proposed 10(j) rule to associate the nonessential experimental population of Mexican wolves with the Mexican wolf subspecies listing, if finalized, rather than with the listing of the gray wolf at the species level and because we are considering changes to the current Mexican wolf nonessential experimental population designation.

### 1.1.2 Previous Environmental Review

The environmental effects of the reintroduction of the Mexican wolf have been previously analyzed and addressed in the following National Environmental Policy Act (NEPA) documents:

- *Final Environmental Impact Statement (FEIS) for the Reintroduction of the Mexican Wolf within its Historic Range in the Southwestern United States. November 06, 1996* (USFWS 1996).
- *Final Environmental Assessment (FEA) for the Translocation of Mexican Wolves Throughout the Blue Range Wolf Recovery Area in Arizona and New Mexico. February 10, 2000* (USFWS 2000).
- *Decision Memo, Mexican Wolf Reintroduction, Pen Installation and Associated Temporary Camp at Twenty-two Release Sites, 2008-2012. USDA Forest Service, Apache-Sitgreaves National Forest. February 18, 2009* (USFS 2009).
- *Decision Memo, Installation of Temporary Mexican (Gray) Wolf Holding Pens, USDA Forest Service, Gila National Forest. March 16, 2006* (USFS 2006).

These documents are incorporated, where appropriate, by reference into this Environmental Impact Statement (CEQ, Sec 1502.21) in an effort to eliminate repetitive discussions of issues previously addressed, exclude from consideration issues already decided, and to focus on the issues ripe for decision in this environmental review (CEQ, Sec. 1502.20 and Sec. 1508.28).

### 1.1.3 Description of the Mexican Wolf

The Mexican wolf is the rarest, southern-most occurring, and most genetically distinct subspecies of all the North American gray wolves (Parsons 1996, Wayne and Vilá 2003, Leonard et al. 2005). The distinctiveness of the Mexican wolf and its recognition as a subspecies is supported by both morphometric (physical measurements) and genetic evidence (78 FR 35664, June 13, 2013). Mexican wolves tend to be patchy black, brown to cinnamon, and cream in color and are somewhat smaller than other gray wolves (Figure 1-1). Adults are about five feet (1.5 meters) in length and generally weigh between 50-90 pounds (23-41 kilograms) with a height at the shoulder of approximately 2-2.5 feet (0.6-0.8 meters) (78 FR 35664, June 13, 2013).


**Figure 1-1. Mexican wolves (Credit: Jacquelyn M. Fallon)**

Mexican wolves historically inhabited montane woodlands and adjacent grasslands in northern Mexico, New Mexico, Arizona, and the Trans-Pecos region of western Texas (Brown 1988) at elevations of 4000-5000 ft. where ungulate prey were numerous (Bailey 1931). The subspecies may have also ranged north into southern Utah and southern Colorado within zones of intergradation where interbreeding with other gray wolf subspecies may have occurred (Parsons 1996, Carroll et al. 2006, Leonard et al. 2005).

Numbering in the thousands before European settlement, Mexican wolf populations declined rapidly in the 20$^{th}$ century primarily due to concerted Federal, state, and private predator control and eradication efforts (Leonard et al 2005). By the early 1970s, the Mexican wolf was considered extirpated from its historical range in the southwestern United States (USFWS 1982). No Mexican wolves were known to exist in the wild in the United States or Mexico from1980 until the beginning of our reintroduction project in 1998 (USFWS 2010).

### 1.1.4 Description of the Mexican Wolf Recovery Program

Reintroduction efforts to reestablish the Mexican wolf in the wild are being conducted in both the United States and Mexico. In the United States the U.S. Fish and Wildlife Service is the Federal agency responsible for the recovery of the Mexican wolf. The Service has been engaged in efforts to conserve and ensure the survival of the Mexican wolf for over three decades. The first Mexican Wolf Recovery Team was formed in 1979, and the United States and Mexico signed the Mexican Wolf Recovery Plan in

September 1982. The 1982 Mexican Wolf Recovery Plan did not provide recovery/delisting criteria, but did provide a prime objective:

"*To conserve and ensure the survival of Canis lupus baileyi by maintaining a captive breeding program and re-establishing a viable, self-sustaining population of at least 100 Mexican wolves in the middle to high elevations of a 5,000 square mile area within the Mexican wolf's historic range"* (USFWS 1982).

This objective has since guided the recovery effort for the Mexican wolf in the United States. The current management structure of the Mexican wolf recovery effort distinguishes between the Service's Mexican Wolf Recovery Program (Recovery Program) and the interagency Mexican Wolf Blue Range Reintroduction Project (Reintroduction Project). The Recovery Program encompasses captive breeding, reintroduction, and all related conservation activities for the Mexican wolf (USFWS 2010). The primary statute governing the Mexican Wolf Recovery Program is the Endangered Species Act. Section 4(f)(1) of the ESA states that the Secretary of the Interior shall develop and implement recovery plans for the conservation and survival of endangered species. Guidance for the specific activities conducted under the Mexican Wolf Recovery Program is provided within several documents including: (1) the 1982 Mexican Wolf Recovery Plan (USFWS 1982); (2) the 1996 Final Environmental Impact Statement (FEIS) (USFWS 1996) (3) the January 12, 1998, Final Rule (63 FR 1752, January 12, 1998); (4) the 1998 Mexican Wolf Interagency Management Plan (USFWS 1998a), and; (5) Federal Fish and Wildlife Permit number TE091551-8, dated 04 April 2013, issued under 50 CFR 17.32. This programmatic permit covers management activities for nonessential experimental wolves within Arizona and New Mexico (USFWS 2013). The Reintroduction Project encompasses the management activities associated with the experimental population.

A comprehensive description of the Recovery Program and the Reintroduction Project is provided in the 2010 Mexican Wolf Conservation Assessment (Appendix D) (USFWS 2010).

#### 1.1.4.1 Captive Breeding Program

A binational captive-breeding program between the United States and Mexico was initiated in the late 1970s with the capture of the last remaining Mexican wolves in the wild. Referred to as the Mexican Wolf Species Survival Plan (SSP) the captive breeding program's ultimate objective is to provide healthy offspring for release into the wild (Figure 1-2), while conserving the Mexican wolf subspecies genome (Lindsey and Siminski 2007). The establishment and success of the captive-breeding program temporarily prevented immediate absolute extinction the Mexican wolf and, by producing surplus animals, has enabled us to undertake the reestablishment of the Mexican wolf in the wild (USFWS 2010, 78 FR 35664, June 13, 2013). The wolves in the captive population are the only source of animals for release into the wild. All Mexican wolves alive today originated from three lineages (Ghost Ranch, Aragon and McBride) consisting of a total of seven wolves. From the original seven "founding" Mexican wolves the captive population has expanded to its current (October 2012) size of 258 wolves held in 52 facilities (Figure 1-3) both in the United States and Mexico (Siminski and Spevak 2012). Because of the small number of founders upon which the existing Mexican wolf population was established there are pronounced genetic challenges which include inbreeding (mating of close relatives), loss of heterozygosity (a decrease in the proportion of individuals in a population that have two different alleles for a specific gene), and loss of adaptive potential (the ability of populations to maintain their viability when confronted with environmental variations) (Fredrickson et. al 2007, 78 FR 35664, June 13, 2013). Inbred populations may have fitness restored by the immigration of unrelated individuals however there are no known possibilities for the addition of new founders that could potential contribute to an improvement in the gene diversity of the existing Mexican wolf population (Siminski and Spevak 2012).

**Figure 1-2. Saddle Pack litter at the Sevilleta Wolf Management Facility (Credit: U.S. Fish and Wildlife Service)**

**Figure 1-3. The Sevilleta Wolf Management Facility (Credit: U.S. Fish and Wildlife Service)**

#### 1.1.4.2 The Mexican Wolf Blue Range Reintroduction Project

The current objective of the Mexican Wolf Blue Range Wolf Reintroduction Project (Reintroduction Project) is to restore a self-sustaining population of at least 100 wild Mexican wolves distributed over 5,000 square miles (12,950 km²) of the Blue Range Wolf Recovery Area (BRWRA). This objective is consistent with the 1982 Mexican Wolf Recovery Plan (Paquet et al. 2001). The Reintroduction Project is a collaborative effort among Federal, state, county, and tribal agencies that: (a) have regulatory jurisdiction and management authority over Mexican wolves or the lands that Mexican wolves occupy in Arizona and New Mexico; or (b) are responsible for representing constituency interests while striving to make reintroduction compatible with current and planned human activities, such as livestock grazing and hunting (MOU 2010).

Under the provisions of the 1998 Final Rule we established two recovery areas, the BRWRA and the White Sands Wolf Recovery Area (WSWRA), within the Mexican Wolf Experimental Population Area (MWEPA) (Figure 1-4). We designated primary recovery zones within each of these recovery areas where the initial release of Mexican wolves from captivity to the wild is authorized. Natural dispersal and translocations (re-release of captured wolves with previous wild experience) are allowed throughout the recovery areas. Wolves which disperse to establish territories outside of the recovery areas must be captured and returned or placed in captivity (63 FR 1752, January 12, 1998). In collaboration with our partners in the Reintroduction Project, we began reintroducing Mexican wolves into the BRWRA in 1998. In 2000, the White Mountain Apache Tribe (WMAT) agreed to allow free-ranging Mexican wolves to inhabit the Fort Apache Indian Reservation (FAIR). Continued occupancy of Mexican wolves on the FAIR is dependent upon tribal agreement. We have only released Mexican wolves into the BRWRA and the FAIR. We have never utilized the WSWRA for the release of wolves.

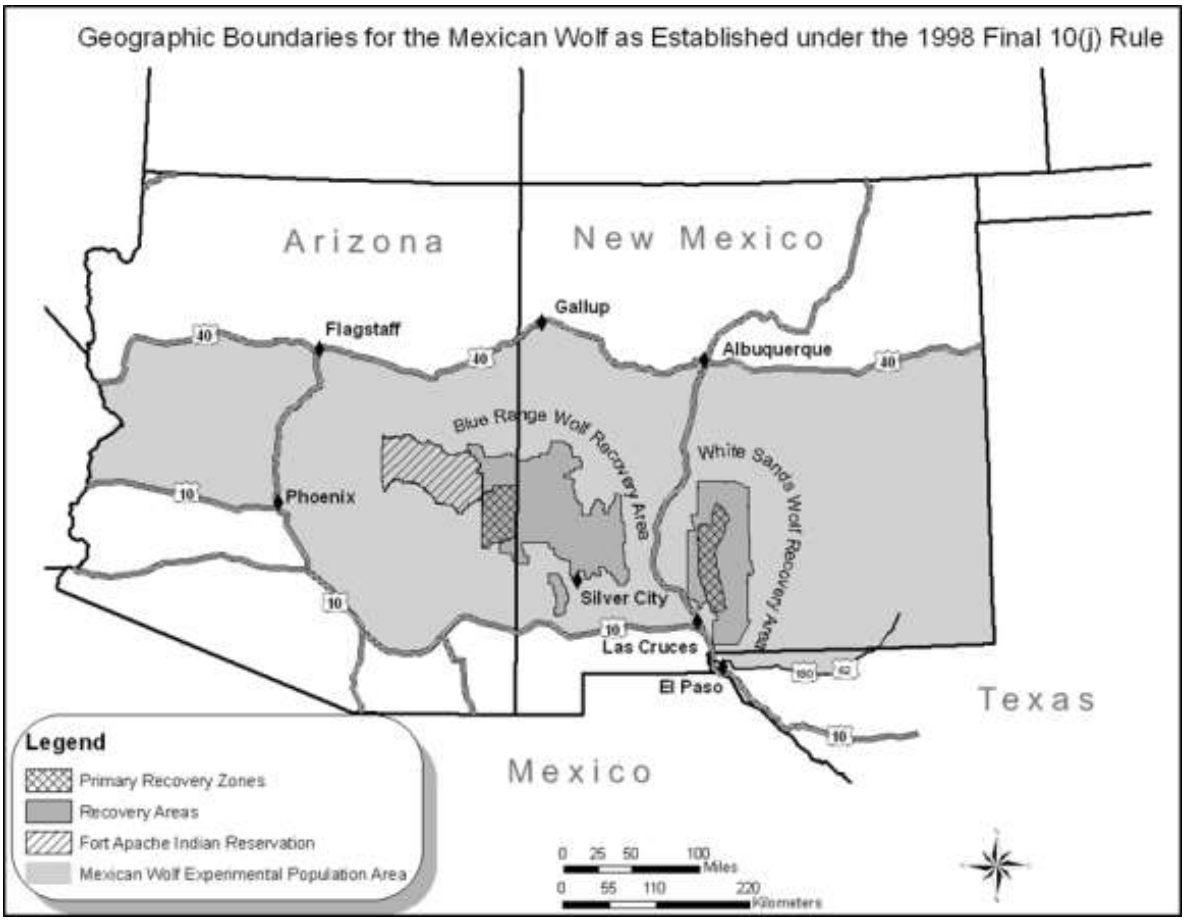


**Figure 1-4. Geographic boundaries for the nonessential experimental population of the Mexican wolf as established under the 1998 Final Rule.**


**Figure 1-5. Blue Range Wolf Recovery Area sign (Credit: U.S. Fish and Wildlife Service)**

The BRWRA is located wholly within the Apache and Gila National Forests in east-central Arizona and west-central New Mexico. It encompasses 7,212 square miles (18,679 $km^2$). The adjoining FAIR provides an additional 2,627 square miles (6,804 $km^2$) for wolf colonization and releases. Mixed conifer forests (Figure 1-6) in the higher elevations and semi-desert grasslands in the lower elevations characterize the BRWRA, with ponderosa pine (*Pinus ponderosa*) forests dominating the area in between (USFWS 1996).


**Figure 1-6. Mixed conifer forest within the Blue Range Wolf Recovery Area (Credit: Jacquelyn M. Fallon)**

Potential native ungulate prey of Mexican wolves within the BRWRA include elk (Figure 1-7) (*Cervus elaphus*), white-tailed deer (*Odocoileus virginianus*), mule deer (*O. hemionus*), and to a lesser extent, pronghorn antelope (*Antilocapra americana*), javelina (*Tayassu tajacu*), and Rocky Mountain bighorn sheep (*Ovis canadensis*) (Parsons 1996). Other sources of prey include small mammals, and occasionally birds (Reed et al 2006).

**Figure 1-7. Elk in the Blue Range Wolf Recovery Area (Credit: U.S. Fish and Wildlife Service)**

Other large predators in the BRWRA include coyotes (*Canis latrans*), cougars (*Puma concolor*), and black bears (Figure 1-8) (*Ursus americanus*) (USFWS 1996).

**Figure 1-8. Black bear and Mexican wolf in the Blue Range Wolf Recovery Area (Credit: Mexican Wolf Interagency Field Team)**

Approximately 82,600 cattle and 7,000 sheep were permitted to graze roughly 69% of the BRWRA, and 50% of the allotments were grazed year-round when the Reintroduction Project began (USFWS 1996). The actual numbers of cattle (Figure 1-9) and sheep varies each year relative to environmental factors and are generally lower under drought conditions.


**Figure 1-9. Cattle grazing in the Blue Range Wolf Recovery Area (Credit: Mexican Wolf Interagency Field Team)**

A complete description of the BRWRA is provided in Chapter 3 and can be found in the 5-Year Review (AMOC and IFT 2005) and in the 1996 Final Environmental Impact Statement (USFWS 1996) which is incorporated herein by reference.

Nonessential experimental status, as established by the 1998 Final Rule allows for the active management of wolves, including relaxing prohibitions on take (see the definition of "take" provided in the Definition of Terms), removal of problem wolves, and the translocation of previously released wolves within the BRWRA. An Interagency Field Team (IFT), consisting of field staff from the Service and our partner agencies, carries out the majority of the routine management activities of the Reintroduction Project. The IFT has the primary responsibilities of collecting data, monitoring (Figure 1-10), and managing the experimental Mexican wolf population. On a daily basis IFT management activities and field work may include:

- Monitoring individual wolves and pack movements

All adult wolves released from captivity or trapped in the wild are radio collared with a goal to maintain a minimum of two collared wolves per pack. Collared wolves are radio-tracked periodically from the ground and a minimum of once a week from the air (weather permitting). Locational data is entered into the Reintroduction Project's database to be correlated with reports for specific incidents (e.g., depredations, nuisance reports), management actions (e.g., captures, translocations, initial releases) and pack activities (e.g., denning, predation, mortalities).


**Figure 1-10. Helicopter count and capture methods (Credit: Mexican Wolf Interagency Field Team)**

- Depredation response, outreach and education

In order to minimize the occurrence of depredation incidents and nuisance behavior IFT activities may include proactive outreach and education efforts with livestock producers and local residents. Response to reports of depredation incidents or nuisance behavior may include the use of non-lethal techniques such as: capture/ radio collar/release on site; guard animals; fladry; taste aversion; harassment using scare devices and noise (e.g., cracker shells) and/or non-lethal munitions (e.g., rubber bullets, bean bag rounds, paintballs); den disturbance; manipulation of pack movements using food caches, and; movement of cattle

away from core pack territory (Figure 1-11, Figure 1-12, Figure 1-13). If the problem persists or becomes chronic the wolf (or wolves) may be captured and translocated or permanently removed to captivity. Lethal control may be used in accordance with approved management plans, protocols, and with the authorization of the Service's Mexican Wolf Recovery Coordinator.


**Figure 1-11. Non-lethal munitions (Credit: U.S. Fish and Wildlife Service)**

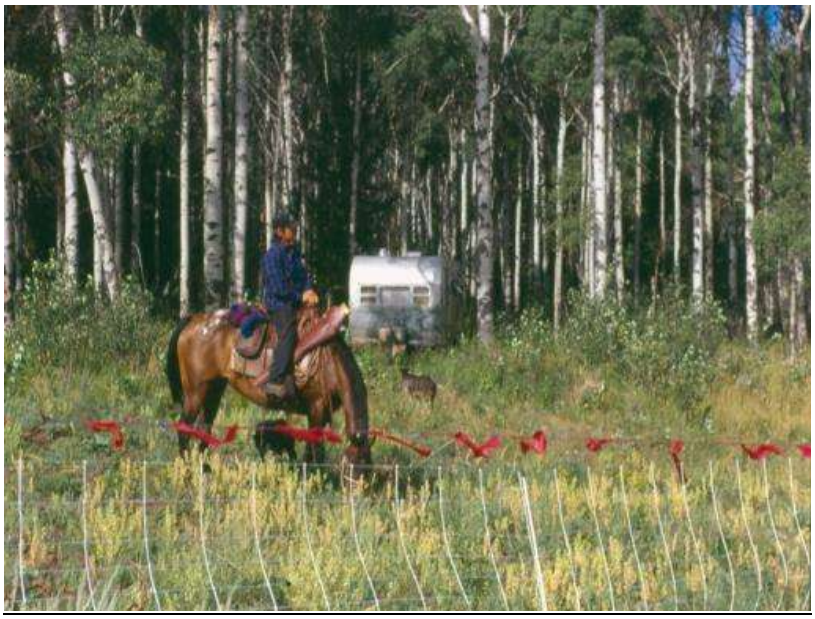

**Figure 1-12. Range rider, fladry and fencing (Credit: U.S. Fish and Wildlife Service)**


**Figure 1-13. Fladry and fencing (Credit: Mexican Wolf Interagency Field Team)**

- Initial releases and translocations

Wolves that are to be directly released from captivity or translocated may be transported by vehicle, mule, or helicopter to release areas (Figure 1-14). In support of the release IFT personnel may build temporary mesh or chain link paneled pens at sites that are previously approved by the U.S. Forest Service (Figure 1-15). Food caches may be maintained as necessary until the wolves leave the area and/or demonstrate their ability to maintain themselves in the wild. Personnel often camp near the release site to monitor the wolves.


**Figure 1-14. Transport by mule into wilderness area release site (Credit: George Andrejko, Arizona Game and Fish Department)**

**Figure 1-15. Pair of Mexican wolves inside a modified soft release pen (Credit: Mexican Wolf Interagency Field Team)**

- Conduct research and collect information

These activities may include: aerial and ground telemetry monitoring; observation of wolves to obtain visual counts on the number of pups and adults in a pack; depredation investigations; howling surveys; collection of biological data (blood, feces, physical measurements and examination), and; collaboration with researchers for data collection and analysis on approved projects (Figure 1-16, Figure 1-17).

**Figure 1-16. A Mexican wolf being processed and fitted with a radio-telemetry collar (Credit: Mexican Wolf Interagency Field Team)**


**Figure 1-17. Trail camera picture used for remote monitoring (Credit: Mexican Wolf Interagency Field Team)**

We select wolves from the captive population for release to the wild based on several factors, including their genetic makeup, reproductive performance, behavior, physical suitability, and overall response to the adaptation process in pre-release facilities (Figure 1-18) (USFWS 2006). We released ninety-two captive-raised wolves into the Primary Recovery Zone (PRZ) of the BRWRA and the FAIR between 1998 and the end of 2012. The PRZ is approximately 1171 square miles (3033 $km^2$) in area, or approximately 16 percent of the entire BRWRA (Figure 1-4). It is situated entirely within the southern portion of the Apache National Forest in Arizona. The Secondary Recovery Zone (SRZ) encompasses all of the Gila National Forest in New Mexico and the northern part of the Apache National Forest in Arizona. It is the remainder of the BRWRA not included in the PRZ. Wolves released in the PRZ of the BRWRA are allowed to naturally disperse into the SRZ.

**Figure 1-18. Release of a collared Mexican wolf (Credit: U.S. Fish and Wildlife Service)**

We may translocate (capture and release in another location) or temporarily remove wild wolves for authorized management purposes such as: depredation behaviors that do not warrant permanent removal; nuisance behaviors that do not warrant permanent removal; boundary violations (e.g., wolves establishing territories wholly outside of the BRWRA or FAIR); necessary veterinary care, and; facilitation of pair bonding. Wolves that we temporarily remove from the wild may be translocated into the PRZ and SRZ of the BRWRA as well as the FAIR (contingent on WMAT concurrence), however, management considerations may prevent re-release of such animals. The Mexican Wolf Recovery Coordinator may authorize permanent removals by lethal or non-lethal (capture and placement in a captive facility) methods due to severe depredation or nuisance behavior. For the period 1998-2012, we permanently removed 36 wolves. This total includes 12 animals removed by lethal control. In summary, from 1998 to 2012 we released 92 wolves from captivity, permanently removed 36 wolves and conducted 118 temporary removals and 102 translocations (Table 1-1).

| Year | Wolves Released | Number of Permanent Removals | Number of Temporary Removals | Number of Translocations |
|---|---|---|---|---|
| 1998 | 13 | 2 | 4 | 3 |
| 1999 | 21 | 0 | 12 | 2 |
| 2000 | 16 | 4 | 19 | 18 |
| 2001 | 15 | 1 | 9 | 6 |
| 2002 | 9 | 3 | 4 | 7 |
| 2003 | 8 | 1 | 14 | 15 |
| 2004 | 5 | 1 | 6 | 9 |
| 2005 | 0 | 5 | 16 | 16 |
| 2006 | 4 | 8 | 10 | 6 |
| 2007 | 0 | 9 | 14 | 5 |
| 2008 | 1 | 0 | 2 | 6 |
| 2009 | 0 | 0 | 7 | 6 |
| 2010 | 0 | 0 | 0 | 1 |
| 2011 | 0 | 1 | 1 | 2 |
| 2012 | 0 | 1 | 0 | 0 |
| Total | 92 | 36[1] | 118[2] | 102[2] |

[1] Permanent removals include 12 animals removed by lethal control.
[2]Temporary removals in excess of translocations equal net loss to population of 16 animals.

**Table 1-1. Mexican Wolf Experimental Population Releases, Removals and Translocations (Blue Range Wolf Recovery Area and Fort Apache Indian Reservation) from 1998 to 2012.**

The IFT conducts an end- of -year count each January in order to establish the minimum number of wolves in the BRWRA and FAIR (Figure 1-19). The Mexican wolf minimum population count in the BRWRA (including the FAIR) was 75 wolves in 2012 (Table 1-2). Based on a wolf population size of 37 wolves, wolf density in the Arizona portion of the BRWRA and FAIR is approximately one wolf per 122 square miles (316 $km^2$) (USFWS 2011). A population of 38 wolves in New Mexico (USFWS 2011) yields an average wolf density in New Mexico of one wolf per 140 square miles (363 $km^2$).

| Year | Minimum Population Count (Observed) |
|---|---|
| 1998 | 4 |
| 1999 | 15 |
| 2000 | 22 |
| 2001 | 26 |
| 2002 | 42 |
| 2003 | 55 |
| 2004 | 46 |
| 2005 | 42 |
| 2006 | 59 |
| 2007 | 52 |
| 2008 | 52 |
| 2009 | 42 |
| 2010 | 50 |
| 2011 | 68 |
| 2012 | 75 |

**Table 1-2. Mexican Wolf End of Year Population Counts in New Mexico and Arizona from 1998 to 2012.**

**Figure 1-19. Mexican wolves in the Blue Range Wolf Recovery Area observed from aircraft (Credit: Mexican Wolf Interagency Field Team)**

### 1.1.5 Mexican Wolf Recovery in Mexico

Responsibility for the reintroduction of the Mexican wolf in Mexico is divided between two federal agencies, CONANP and SEMARNAT's Dirección General de Vida Silvestre. Mexico initiated the reestablishment of the Mexican wolf to the wild with the release of five captive-bred wolves into the San Luis Mountains in the state of Sonora just south of the U.S.–Mexico border in October 2011 (Figure 1-20

Area 1). Additional releases continued in 2012 with a sixth Mexican wolf released in March 2012 and a pair of Mexican wolves released in October 2012. The Mexican government has informed the Service of their plans to continue releases of Mexican wolves into the northern area in the Sierra Madre Occidental (Figure 1-20 Areas 1, 2 and the mountainous habitatat between these two areas), and to potential initiate releases in the Mexican state of Nuevo Leon (Figure 1-20 Area 5). Although high levels of mortality due to illegal killing has resulted in a setback to the reestablishment of a population of wolves we expect the number of Mexican wolves in the wild in Mexico to fluctuate from zero to several wolves or packs of wolves during 2013 and into the future in or around Sonora and Chihuahua or other Mexican States.

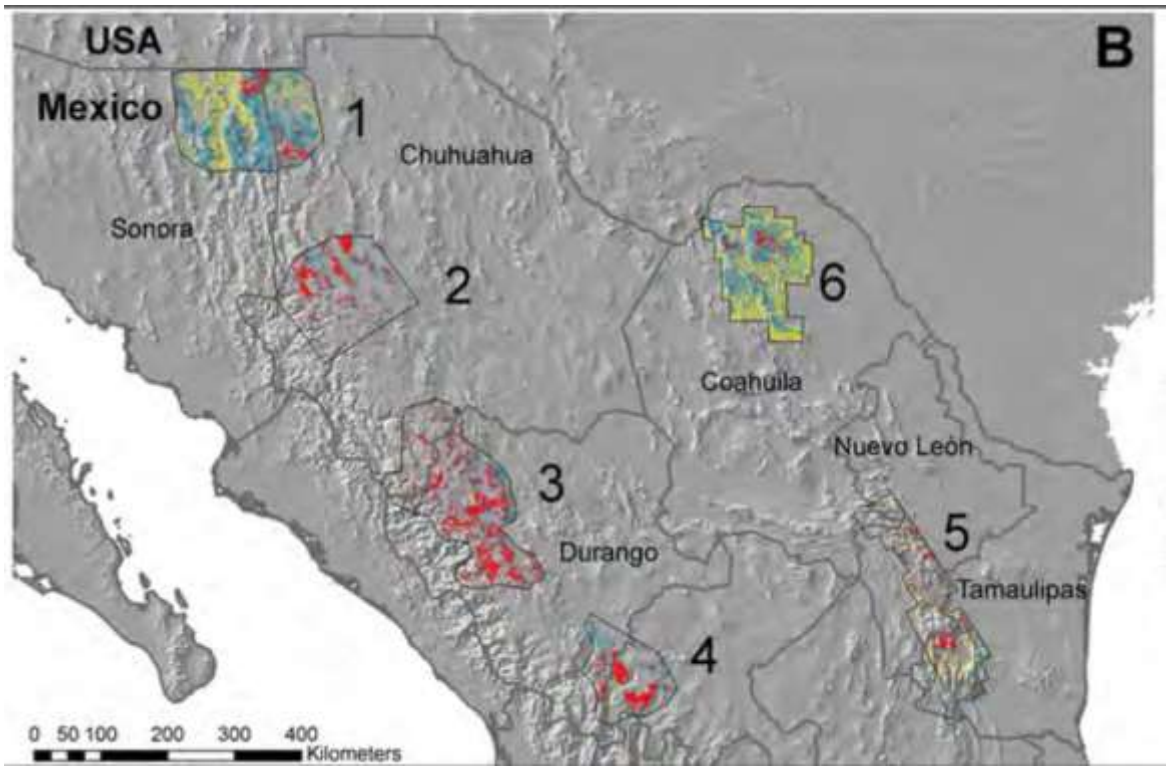


**Figure 1-20. Potential reintroduction areas in northern Mexico (1, Sonora-Chihuahua; 2, Central Chihuahua; 3, Chihuahua-Durango; 4, Durango-Zacatecas; 5, Nuevo Leon-Tamaulipas; 6, Coahuila). Colored areas have intermediate probability of anthropogenic mortality within the reintroduction area. Red, Blue, and Yellow colors indicate high, intermediate and low quality habitat, respectively (Modified from Araiza et al. 2012).**

## 1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION

We are proposing to modify the regulations established for the Mexican wolf reintroduction in the 1998 Final Rule and to implement a management plan for Mexican wolves for those areas of Arizona and New Mexico that are outside of the Mexican Wolf Experiment Population Area (MWEPA). The purpose of our proposed action is to establish a viable, self-sustaining experimental population of Mexican wolves within the MWEPA and to effectively manage Mexican wolves throughout Arizona and New Mexico. Modification of the regulations established in our 1998 Final Rule is needed because under the current regulations we have not been able to achieve the necessary population growth that would ensure the resiliency and genetic health of the experimental population. Implementation of the Mexican Wolf

Management Plan is needed because there is a potential for Mexican wolves to inhabit areas in Arizona and New Mexico outside of the MWEPA.

The mission statement of the U.S. Fish and Wildlife Service is:

*"Working with others, to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people."*

Under the provisions of the Endangered Species Act of 1973([16 USC §1531-1544], as amended (ESA), we have primary responsibility for conservation of terrestrial and freshwater organisms. Section 4(f)(1) of the ESA directs the Secretary of the Interior to "develop and implement recovery plans for the conservation and survival of endangered species." We developed a recovery plan for the Mexican wolf in 1982 (Service 1982). The 1982 Mexican Wolf Recovery Plan did not provide recovery/delisting criteria, but did provide a prime objective:

"*To conserve and ensure the survival of Canis lupus baileyi by maintaining a captive breeding program and re-establishing a viable, self-sustaining population of at least 100 Mexican wolves in the middle to high elevations of a 5,000 square mile area within the Mexican wolf's historic range."*

Our proposal to modify the 1998 Final Rule is a result of the experience and information we have gained since we began pursuing this reintroduction objective in 1998. Over time, we have identified a number of regulatory mechanisms and threats hindering the biological progress of the population and the recovery program including:

- Regulations associated with the internal and external boundaries of the Blue Range Wolf Recovery Area (BRWRA) that limit release of captive-raised wolves to a small subset of the recovery area (Paquet et al. 2001, AMOC and IFT 2005, Service 2010).
- Regulations that require capture and removal of wolves that disperse to establish territories outside of the recovery area (Paquet et al. 2001, AMOC and IFT 2005, Service 2010);
- Management guidelines for conducting wolf control actions which require aggressive removal of wolves due to depredation, nuisance, and boundary violations (Service 2010);
- Human caused mortality, including illegal shooting (78 FR 35664, June 13, 2013); and
- Effects of inbreeding depression, including small litter size and low pup survival rates resulting in low natural recruitment, and low adaptive potential (78 FR 35664, June 13, 2013).

The cumulative impacts of these regulatory hindrances and threats to the Mexican wolf are putting the reintroduction project at risk of failure to achieve the reintroduction goal of a viable, self-sustaining experimental population of wolves (USFWS 2010). High human caused mortality and high rates of management removals have resulted in a population growth rate that has not achieved reintroduction project goals for the experimental population in the expected timeframe (USFWS 2010). Furthermore, the Mexican wolf is more susceptible to population decline at a given mortality rate than other gray wolf populations because of smaller litter sizes, less genetic diversity, lack of immigration from other populations, and potential low pup recruitment (USFWS 2010). When we began the reintroduction effort, we projected that the population would grow to a minimum of 100 wolves by 2006 (USFWS 1996). Between 1998 and 2003, the actual minimum population of Mexican wolves in the BRWRA tracked closely with population projections in the 1996 Final Environmental Impact Statement (USFWS 1996). Between 2002 and 2011 the population size hovered around the halfway point of the population target of at least 100 wolves. Although the size of the experimental population increased from 2010 to 2012 it has not exhibited continuous steady growth over the course of the entire reintroduction nor have we achieved

the minimum target population objective. As of December 31, 2012, the reintroduced wild Mexican wolf minimum population in the BRWRA (including the FAIR) was 75 wolves (Table 1-3).

Although some degree of fluctuation in the annual growth rate of the experimental population is to be expected our implementation of the Mexican wolf reintroduction project has provided insight as to the extent to which provisions of the 1998 Final Rule have hindered the growth of the experimental population by: limiting the initial release of captive-raised wolves to only the Primary Recovery Zone (PRZ) of the BRWRA; stipulating that wolves that disperse to establish territories outside of the BRWRA be captured and returned or placed in captivity, and; requiring the aggressive removal of wolves. In wild wolf populations annual rates of increase generally vary between 0.93 and 2.40 (Fuller and Keith 1980, Fritts and Mech 1981 as cited in Paquet et al. 2001). A population growth rate (annual rate of increase) of 1.0 corresponds to replacement where recruitment (new members gained either through birth or immigration) is equal to deaths and the size of the population remains static. An annual growth rate (annual rate of increase) of 2.0 results in a doubling of the population size because recruitment (including releases) is twice that of deaths (including removals). Several factors limit growth of wolf populations including, most significantly, ungulate prey biomass and human-caused mortality. In a managed wild population management removals are similar to mortality and releases are similar to recruitment (Paquet et al. 2001). The contributions of management actions to the overall growth of the experimental population of Mexican wolves over the course of the reintroduction project from 1998 through 2012 can be generally broken into three phases. In the first phase, corresponding to the years 1998 through 2002, a high number of initially released and translocated wolves ($n$ = 110) together with a moderate number of temporary and permanent removals ($n$ = 58) contributed to a net gain of 38 wolves in the overall population and the highest population growth rate (2.003) experienced by the reintroduction project. The second phase from 2003 through 2007, characterized by a moderate number of initial releases and translocations of wolves ($n$ = 68) and a high number of temporary and permanent removals ($n$ = 84), contributed to a net gain of 10 wolves in the overall population and a population growth rate that was relatively flat (1.069). A third phase from 2008 through 2012, characterized by a low number of releases and translocations ($n$ = 16) but also a low number of temporary and permanent removals ($n$ = 11) contributed to a net gain of 23 wolves and a higher population growth rate (1.092) than the previous phase (Tables 1-4 and 1-5). This analysis of the growth rates of the experimental population correlated with the general phases of our management activity validate the recommendations of the three (Paquet et al. 2001) and five year (AMOC and IFT 2005) reviews and our Conservation Assessment completed in 2010 (Appendix D) (USFWS 2010). These reports universally identified inflexible management regulations resulting in a low number of releases and a high number of removals as counterproductive to the achievement of the population growth needed for the establishment of a viable, self-sustaining experimental population of Mexican wolves.

| Year | Minimum Population Count (Observed) | Population Projected in 1996 Final Environmental Impact Statement (FEIS)[1] |
|---|---|---|
| 1998 | 4 | 7 |
| 1999 | 15 | 14 |
| 2000 | 22 | 23 |
| 2001 | 26 | 35 |
| 2002 | 42 | 45 |
| 2003 | 55 | 55 |
| 2004 | 46 | 68 |
| 2005 | 42 | 83 |
| 2006 | 59 | 102 |
| 2007 | 52 | - |
| 2008 | 52 | - |
| 2009 | 42 | - |
| 2010 | 50 | - |
| 2011 | 68 | - |
| 2012 | 75 | - |

[1]FEIS projections were made only through 2006 (USFWS 1996)

**Table 1-3. Population Projections Compared to Mexican Wolf End of Year Minimum Population Counts in New Mexico and Arizona from 1998 to 2012.**

| Year | Releases and Translocations | Number of Mortalities[1] | Removals (Both permanent and temporary)[2,3] | Minimum Population Count (Observed) |
|---|---|---|---|---|
| 1998 | 16 | 5 | 6 | 4 |
| 1999 | 23 | 3 | 12 | 15 |
| 2000 | 34 | 4 | 23 | 22 |
| 2001 | 21 | 9 | 10 | 26 |
| 2002 | 16 | 3 | 7 | 42 |
| 2003 | 23 | 12 | 15 | 55 |
| 2004 | 14 | 3 | 7 | 46 |
| 2005 | 16 | 4 | 21 | 42 |
| 2006 | 10 | 6 | 18 | 59 |
| 2007 | 5 | 4 | 23 | 52 |
| 2008 | 7 | 13 | 2 | 52 |
| 2009 | 6 | 8 | 7 | 42 |
| 2010 | 1 | 6 | 0 | 50 |
| 2011 | 2 | 8 | 2 | 68 |
| 2012 | 0 | 4 | 1 | 75 |
| Total | 194 | 92 | 154 | N/A |

[1]Mortalities include 37 due to illegal shooting (46%), 12 due to vehicle collision (15%), 14 due to natural causes (17.5%), 9 due to unknown causes (11%), 4 awaiting necropsy results (5%), and 4 due to other causes (5%).
[2]Permanent removals include 12 animals removed by lethal control.
[3]Temporary removals in excess of translocations equal net loss to population of 16 animals.

**Table 1-4. Mexican Wolf Experimental Population Growth from 1998 to 2012**

| Period | Releases and Translocations | Number of Mortalities[1] | Removals (Both permanent and temporary)[2,3] | Net Gain in Population | Growth Rate |
|---|---|---|---|---|---|
| 1998-2002 | 110 | 24 | 58 | 38 | 2.003 |
| 2003-2007 | 68 | 31 | 84 | 10 | 1.069 |
| 2008-2012 | 16 | 31 | 12 | 23 | 1.092 |

**Table 1-5. Mexican Wolf Experimental Population Growth Rate from 1998 to 2012**

We do not consider a minimum population of around 100 wolves to equate to "self-sustaining" or "viable" (USFWS 2010). At its current size of a minimum of 75 wolves, and even at the current objective of at least 100 wolves, the BRWRA population is, by demographic measures considered small (Shaffer 1987, Boyce 19992, Mills 2007, USFWS 2010) and has a low probability of persistence. The viability of the population when it reaches its target of at least 100 wolves remains unquantified, although qualitatively this target is significantly below estimates of viability appearing in the scientific literature and gray wolf recovery plans, which suggest hundreds to over a thousand wolves are necessary for long-term persistence in the wild (78 FR 35664, June 13, 2013).

The principles of resiliency and representation inform our consideration of what constitutes a viable, self-sustaining population of Mexican wolves in the MWEPA that can contribute to recovery. The principle of resiliency suggests that species that are more numerous and widespread are more likely to persist than

those that are not (Shaffer and Stein 2000). A species with a small population that is narrowly distributed is not resilient. It faces a higher risk of extinction than a species that is widely and abundantly distributed. The higher risk of extinction is due to the sensitivity of small populations to stochastic (that is, uncertain) demographic events such as low litter size or high adult mortality and to environmental stochasticity such as variation in prey base, catastrophic fire, drought, or disease epidemic. Small populations are also thought to be more vulnerable because of the deleterious effects of inbreeding (Wright 1977 as cited in Paquet et al. 2001).

Representation refers to the genetic variation embodied by members of a population or species. Higher levels of variation minimize the risk of inbreeding and better support ecological and evolutionary processes than low levels. Exploration of genetic representation demonstrates that the short-term genetic fitness and long-term adaptive potential of a population are best supported by establishing larger, rather than smaller, effective (that is, animals in the breeding population) population sizes. A depletion of genetic variation inevitably results when small effective populations remain closed (without immigration) over several generations (Lande and Barrowclough 1987). These small isolated populations may become even smaller if decreased genetic fitness results in reduced survival (increased mortality) (Paquet et al. 2001). The combination of small population size and low gene diversity can lead to a self-amplifying cycle in which mortality results in additional reduction in gene diversity, which leads to decreased fitness and lower survival rates, resulting in an "extinction vortex". Because of this self-amplifying cycle, the rate of extinction for small populations is higher than predicted from the population size alone (Caro and Laurenson 1994 as cited in Paquet et al. 2001).

At its current size and distribution the experimental population of Mexican wolves has low resiliency and does not contain adequate representation (USFWS 2010). It is a small, isolated, genetically impoverished population which has poor representation of the genetic variation remaining in the captive population. The wolves in the experimental population have Founder Genome Equivalents (FGE) that are 33 percent lower than found in the captive population and the estimated relatedness (population mean kinship) of these animals suggest that on average they are as related to one another as outbred full siblings are related to each other (Siminski and Spevak 2012). When gene diversity falls below 90% of that in the founding population, reproduction may be increasingly compromised by, among other factors, lower birth weights, smaller litter sizes, and greater neonatal mortality (Siminski and Spevak 2012). As of July 2012, the experimental population of wolves in the BRWRA has a retained gene diversity of 74.99%, and when compared to 2010 has shown a slight decline in both retained gene diversity and FGE (Siminski and Spevak 2012). Based on current estimates extrapolated to the minimum population target of 100, an effective (breeding animal) population size of 28 wolves is not adequate to ensure short or long-term genetic fitness for the experimental population of Mexican wolves in the BRWRA (USFWS 2010). There is evidence of strong inbreeding depression in the experimental population (Fredrickson et al. 2007) and without substantial management action to improve the genetic composition of the experimental population, inbreeding will accumulate and heterozygosity and alleles will be lost much faster than in the captive population (78 FR 35664, June 13, 2013). For the experimental population to become viable and self-sustaining, and thereby contribute to recovery, we must increase the size of the population and improve its gene diversity.

The reintroduction project for Mexican wolves now being undertaken by the Mexican government has created a requirement for a management plan for Mexican wolves that enter the United States and occur in areas of Arizona and New Mexico that are outside of the MWEPA. Dispersal and natural re-colonization of areas of suitable habitat in Arizona and New Mexico is possible if the Mexican government succeeds in establishing populations of Mexican wolves in the planned reintroduction areas of Mexico. Natural dispersal from Mexico into those areas of suitable habitat south of I-10 (the southern border of the MWEPA) is more likely than dispersal to those portions of Arizona and New Mexico north

of I-40. However, wolves are capable of dispersing long distances and wolves from the experimental population dispersing outside of the MWEPA without our knowledge could also contribute to natural re-colonization of areas of suitable habitat both south of I-10 and north of I-40. We would implement a management plan for Mexican wolves in these areas through an Endangered Species Act (ESA) Section 10 (a)(1)(a) research and recovery permit. This permit allows us to manage wolves to benefit their long term recovery and survival while effectively responding to reports of depredation incidents and nuisance behavior.

Recent scientific literature suggests that recovery will require redundant populations connected via dispersal to maintain self-sustaining viable populations (Wayne and Hedrick 2010, Carroll et al. in press). Based on this, we believe that recovery and long-term conservation of the Mexican wolf in the southwestern U.S. and northern Mexico will likely "depend on establishment of a metapopulation or several semi-disjunct but viable populations spanning a significant portion of its historic range in the region" (Carroll et al. 2006). The reintroduction of the Mexican wolf into the BRWRA was envisaged "as the first step toward recovery" (USFWS 1982, 63 FR 1752, January 12, 1998). We intend for our modifications to the 1998 Final Rule to contribute to the achievement of this "first step" by:

- Increasing the size, and improving the genetic health, of the experimental population of Mexican wolves – a population that will ultimately contribute to future recovery efforts;
- Improving the efficacy and flexibility of our management of the experimental population of Mexican wolves within the MWEPA

Our current management regulations are unlikely to enable us to attain a viable, self-sustaining population of Mexican wolves in the wild. Therefore we are proposing to modify the regulations established for Mexican wolf reintroduction in the 1998 Final Rule. We consider implementation of a management plan to be important because there is an increasing likelihood that Mexican wolves may disperse from Mexico into the United States and inhabit areas with suitable habitat in Arizona and New Mexico outside of the MWEPA. Therefore we propose to implement a management plan for Mexican wolves for these areas. In summary to meet our purpose and need our Proposed Action is intended to:

- More rapidly increase the total number of wolves in the experimental population. A larger and more viable population of wolves distributed over a larger area is more resilient than a small population in a small area and can be managed more effectively in response to wolf-livestock conflict, nuisance behaviors, and mortality factors.
- Improve the gene diversity of the experimental population. Higher levels of genetic variation decrease the risk of inbreeding and increases adaptive potential compared to low levels. With better representation the population is better able to support the loss of individual wolves with a particular genetic make-up. Wolves that may be lost from the population due to management removal actions or mortalities can be replaced with initial releases of captive-raised Mexican wolves with similar genetic background.
- Improve the recruitment of captive-raised wolves into the reintroduced wild population by expanding the area available for their initial release. Packs have established home ranges within the majority of the high quality habitat in the PRZ of the BRWRA. The release of additional family groups directly from captivity into suitable habitat in the PRZ has been therefore inhibited by the occupancy by other wolf packs. This situation has been one of the main factors responsible for the release of only one captive-raised wolf into the BRWRA during the period 2007 through 2012 (Table 1-1).

- Accommodate natural dispersal behavior by allowing the experimental population to occupy suitable habitat in the MWEPA. Natural dispersal and colonization of new areas is a key element in improving the resiliency of the experimental population.
- Effectively address wolf-livestock conflicts and the potential for wolf-human interaction within the MWEPA. Agreements made in voluntary cooperation with tribal governments and private landowners can benefit both Mexican wolf recovery and establish management actions that pro-actively minimize nuisance behavior and depredations.
- Effectively manage Mexican wolves in those areas of Arizona and New Mexico outside of the MWEPA in a manner that conserves and promotes their survival while being responsive to reports of depredation incidents and nuisance behavior.

## 1.3 RATIONALE FOR ELEMENTS OF OUR PROPOSED ACTION AND ALTERNATIVES

The following sections provide the rationale for specific elements of the proposed action and alternatives that we are considering for implementation.

### 1.3.1 Boundary Changes

The 3-Year (Paquet et al. 2001) and 5-Year (AMOC and IFT 2005) Reviews and the Conservation Assessment completed in 2010 (USFWS 2010) identified a number of issues associated with the internal and external geographic boundaries of the Blue Range Wolf Recovery Area (BRWRA) and the Mexican Wolf Experimental Population Area (MWEPA) that appeared to be hindering the growth of the Mexican wolf experimental population. We are proposing changes in the boundaries of the Mexican wolf experimental population to correct restrictions that were identified in our 2010 Conservation Assessment as contributing to the risk of population failure and adding to the challenges for recovery, particularly as related to genetic fitness (*representation*) and long-term adaptive potential (*resiliency*) of the experimental population (USFWS 2010).

#### 1.3.1.1 Removal of the designation of the White Sands Wolf Recovery Area (WSWRA) as an area for the reintroduction of Mexican wolves

**Alternatives One through Four**: *Remove the designation of the WSWRA as an area for the reintroduction of Mexican wolves.*

We propose to remove the designation of the WSWRA because we no longer consider the area suitable for the initial release of captive-raised Mexican wolves.

In our 1998 Final Rule, we established two recovery areas (the BRWRA and the WSWRA) within the MWEPA. We designated the WSWRA as a wolf recovery area primarily because it lies within the probable historical range of the Mexican wolf, has a low density of human use and is largely free of livestock. The WSWRA encompasses 4,028 square miles (10,311 $km^2$) in south-central New Mexico. It includes all of the White Sands Missile Range (WSMR) and Holloman Air Force Base, White Sands National Monument, the San Andres National Wildlife Refuge (NWR) and the Jornada Experimental Range. The San Andres and the Oscura mountain ranges are within the WSWRA with the San Andres Mountains making up most of the primary recovery zone (USFWS 1996). Mule deer (*Odocoileus hemionus*) are the most abundant ungulate followed by the non-native African oryx (*Oryx gazella*), pronghorn antelope (*Antilocapra americana*) and feral horses (USFWS 1996). A small population of desert bighorn sheep (*Ovis canadensis mexicana*) also lives within the San Andres NWR.

Under the 1998 Final Rule, the reintroduction of wolves into the WSWRA through initial release is authorized, "if the Service finds it necessary and feasible" (63 FR 1752, January 12, 1998). Wolf population numbers are directly related to ungulate biomass (Fuller 1989). Due to a low density of

ungulate prey two independent assessments suggest that the WSWRA could only support 20 to 30 wolves (Bednarz 1988, Green-Hammond 1994). Deer populations have declined since these evaluations were conducted. We therefore consider this to be an overestimate of how many Mexican wolves this area could support in the present environment and have reevaluated the WSWRA as unlikely to be an area that can consistently support occupancy by wolves. The 3-Year Review concluded that a population of 20-30 wolves in the WSWRA "is not viable" and recommended that "the USFWS should not expend resources on reintroducing wolves to WSWRA (Paquet et al. 2001). The 5-Year Review also recommended that "any amended or new Mexican Wolf Nonessential Experimental Population Rule drafted…. not include White Sands Missile Range as a Mexican Wolf Recovery Area or as a Reintroduction Zone" (AMOC and IFT 2005). We have never utilized the WSWRA for the release or translocation of wolves because of the low density of ungulates and our consequent reevaluation of it as an area not suitable area for wolf reintroduction and release.

Under our proposal to allow Mexican wolves to naturally disperse throughout the MWEPA, Mexican wolves could on their own, traverse or establish home ranges in the San Andres and Oscura mountain ranges. However, due to the lack of an adequate prey base we do not intend to conduct initial release of captive-raised wolves in these areas. Because of these limitations and based on the recommendations of the Three-Year and Five-Year Reviews, we do not consider the designation of the WSWRA as a recovery area necessary to achieve our reintroduction goal of establishing a viable, self-sustaining experimental population of Mexican wolves within the MWEPA.

#### 1.3.1.2 Modification of the geographic boundaries of the Mexican Wolf Experimental Population Area (MWEPA)

**Alternatives One through Four:** *Remove the small portion of Texas lying north of U.S. Highway 62/180 to the Texas-New Mexico boundary from the MWEPA.*

We propose to remove the small portion of Texas lying north of US Highway 62/180 from the MWEPA because: (1) it is not expected to substantially contribute to the population growth or range expansion necessary to improve the resiliency and genetic health (representation) of the experimental Mexican wolf population, and; (2) we do not believe that continuing to include a small part of Texas within the MWEPA contributes to our effective management of Mexican wolves in Arizona and New Mexico.

The small portion of Texas lying north of US Highway 62/180 encompasses the southern extent of the Guadalupe Mountains and includes Guadalupe Mountains National Park. The montane areas of the national park contain coniferous forests dominated by Douglas fir, southwestern white pine, and ponderosa pine and support mule deer and small elk populations (NPS 2013). The MWEPA as currently configured encompasses 121,775 square miles (315,396 $km^2$) with 44,155 square miles (114,361 $km^2$) of potentially suitable wolf habitat. Alternatives Three and Four propose to expand the MWEPA south in Arizona and New Mexico to the international border with Mexico, adding an additional 33,417 square miles (86,550 $km^2$), including 3,861 square miles (10,000 $km^2$) of potentially suitable wolf habitat. Modifying the geographic boundaries of the MWEPA to eliminate Texas would remove 1,456 square miles (3,771 $km^2$) from the MWEPA with no areas that we assess as potential suitable wolf habitat capable of supporting recolonizing wolves. Wolves are capable of dispersing long distances (Mech and Boitani 2003). Our proposal to allow Mexican wolves to naturally disperse from the Blue Range Wolf Recovery Area (BRWRA) into the MWEPA could lead to the dispersal and natural recolonization of areas of suitable habitat in central and south-eastern New Mexico. While individual wolves might disperse into the montane areas of the Guadalupe National Park the small size and extent of these areas make it unlikely that they would persist. Furthermore, we intend to capture and return Mexican wolves originating from the nonessential experimental population that disperse outside of the MWEPA.

Our proposal to conform to state political boundaries by modifying the eastern boundary of the MWEPA to end at the New Mexico/Texas state line is intended to both streamline state agency involvement in the reintroduction project and to facilitate the Federal and state interagency cooperation necessary to effectively manage the experimental population of Mexican wolves in Arizona and New Mexico. Mexican wolves within the MWEPA are managed as a nonessential experimental population in accordance with the section 10(j) of the ESA. Any Mexican wolf outside of the MWEPA, regardless of origin, would be considered and managed as endangered under the ESA. Under a 10(a)(1)(A) permit, we intend to capture and return any Mexican wolf outside of the MWEPA that is part of the experimental population. No potential suitable habitat large enough to support recolonizing wolves is available in the small portion of the current MWEPA that is in Texas. We consider it unlikely that Mexican wolves would persist if they dispersed into this area from the core population area of the MWEPA. Furthermore, we intend to capture and return Mexican wolves originating from the nonessential experimental population that disperse outside of the MWEPA. If we were to retain the small portion of the MWEPA that is in Texas in a new final 10(j) rule we would not expect to use this area for translocations because of the lack of potential suitable habitat. Therefore, we do not expect this portion of the MWEPA to substantially contribute to the population growth or range expansion necessary to improve the resiliency and genetic health (representation) of the experimental Mexican wolf population. Neither do we expect the participation of Texas state agencies in the reintroduction project to be necessary to improve the effectiveness of our management of the experimental population of Mexican wolves within the MWEPA. For these reasons we do not consider the continued designation of the small area of Texas lying north of US Highway 62/180 to the Texas-New Mexico boundary as a part of the MWEPA necessary to achieve our reintroduction goal of establishing a viable, self-sustaining experimental population of Mexican wolves within the MWEPA.

#### 1.3.1.3 Expansion of the Mexican Wolf Experimental Population Area (MWEPA)

**Alternatives Three and Four**: *Move the southern boundary of the MWEPA in Arizona and New Mexico from Interstate 10 to the United States-Mexico international border.*

In Alternatives Three and Four we propose to move the southern boundary of the MWEPA in Arizona and New Mexico south to the international border with Mexico so that we can manage Mexican wolves in this area under the nonessential experimental population 10 (j) Rule. We believe that this expansion, in conjunction with the adoption of the provisions of the proposed 10 (j) Rule (Appendix B) that would allow Mexican wolves to disperse from the Blue Range Wolf Recovery Area (BRWRA) into the MWEPA and which provide us additional flexibility to manage these wolves, could help achieve the population growth necessary to improve the resiliency and genetic health of the Mexican wolf experimental population.

Within this proposed expansion of the MWEPA areas with potential suitable habitat that could support naturally dispersing and recolonizing wolves can be found within:

- Southern Hidalgo, Grant, and Luna counties including the Alamo Hueco, Big Hatchet Mountains, and West Potrillo Mountains Wilderness Study Areas, the Peloncillo Mountains of the Coronado National Forest, and the Animas, Little Hatchet, Big Hatchet, Alamo Hueco, Cedar and Potrillo mountain ranges (New Mexico).
- The U.S./Mexico border counties of Santa Cruz and Cochise which include the Canelo Hills and the Chiricahua, Patagonia, Huachuca, Tumacacori, Atascosa, Santa Rita, Whetstone, Dragoon, and Peloncillo mountain ranges (e.g., the "Sky Islands") of the Coronado National Forest and the U.S. Army, Fort Huachuca (Arizona) (Figure 1-21)


**Figure 1-21. Areas of potential wolf habitat in the proposed expanded Mexican Wolf Experimental Population Area south of I-10 in Arizona and New Mexico.**

Wolves persisted in the mountainous parts of this area into the 1960s (Brown 1988). We expect the historic wolf dispersal corridors in the border region that were used by wolves before their extirpation could again be used by dispersing wolves from the reintroduction project in Mexico and by dispersing wolves from the BRWRA. The reintroduction of Mexican wolves in Mexico which began with the initial release of five wolves in October, 2011 is expected to continue. The designated reintroduction areas (Chihuahua/Sonora) in Mexico extend north to within approximately 30 miles (48 km) south of the United States border at the Arizona/New Mexico state line. The distance from the most southern boundary of the BRWRA to Interstate-10 (I-10) is seven miles (12 km). Gray wolves are capable of dispersing > 500 miles (>800 km) (Fritts 1983, Boyd et al. 1995). The observed movement distance for dispersing wolves in the BRWRA population averaged 54 +/- 6 miles (87 km) (IFT 2005). Dispersal and natural re-colonization of areas of suitable habitat in Arizona and New Mexico south of I-10 to the international border with Mexico is possible both from reintroduced wolves in Mexico and from the BRWRA population of wolves if our proposal to allow wolves to disperse into the MWEPA from the BRWRA is finalized.

Dispersal and colonization of new areas is vital to establishing long-term population viability (Boyd and Pletscher 1999). Both the 3-Year (Paquet et al. 2001) and 5-Year Review (AMOC and IFT 2005) agree that removal of wolves for no other reason than being outside of the BRWRA "increases the cost of the

overall recovery program…(and) excludes habitat that could enhance recovery efforts and artificially restricts natural dispersal" (AMOC and IFT 2005). An expansion of the MWEPA south to the international border with Mexico would allow us to manage Mexican wolves in this area, regardless of origin, under the experimental population 10(j) rule. The regulatory flexibility provided by our proposed 10(j) rule would allow us to take management actions within the MWEPA that will benefit wolf reestablishment such as translocations on public lands and initial releases and translocations on private or tribal lands if requested by the landowner or tribal government.

Under our proposed 10(j) rule Mexican wolves are to be classified in accordance with their location. All Mexican wolves found within the MWEPA will be part of the experimental population, while those found outside will be considered endangered. In accordance with the proposed rule, the Service intends to capture and return experimental wolves outside of the MWEPA through a 10(a)(1)(A) permit. However, at the point of establishment of the MWEPA, we do not expect a natural population of wolves to exist outside of the BRWRA. Therefore, regardless of the configuration of the MWEPA, we will consider the MWEPA to be wholly separate geographically from any natural Mexican wolf population. Any Mexican wolf inside of the MWEPA would be considered experimental until such time as the Mexican wolf is delisted. Any Mexican wolf outside of the MWEPA, even if that wolf was introduced as experimental, would be considered as endangered. This "zone" approach, which ignores the origin of each Mexican wolf and instead determines status by the wolf's current location, is logical and appropriate because the origin of an individual wolf is difficult to establish with any certainty. With this understanding of the rule in mind, there cannot be overlap between endangered Mexican wolves and the experimental population because the individual populations are clearly delineated until recovery is achieved. Indeed, we have designed this "zone" approach to encourage interbreeding between the experimental population and Mexico. Further, this "zone" approach is also fully consistent with the unavoidable fact that listed species, particularly highly mobile animals like wolves, can "lose" or "gain" protections simply by crossing geographical boundaries

Movement of the MWEPA boundary in Arizona and New Mexico south to the international border with Mexico would add an area with 3,861 square miles (10,000 $km^2$) of potential suitable wolf habitat to be managed under the 10(j) experimental population rules. By including this area within the MWEPA we expect to improve the effectiveness of our management both for Mexican wolves which may disperse into the United States from Mexico and for wolves which may disperse from the core population of reintroduced Mexican wolves in the BRWRA. Management actions such as translocations could supplement natural dispersal. Other management actions, such as establishing management agreements with private and tribal landowners could facilitate the expansion of occupied wolf habitat and the linkage between pack territories necessary to improve the representation and the resiliency of the Mexican wolf experimental population. If we do not extend the MWEPA south of its current boundary at I-10 we would not allow Mexican wolves to naturally disperse into this area from the BRWRA. This boundary extension combined with our proposal to allow wolves to naturally disperse into the MWEPA from the BRWRA and the increased regulatory flexibility of our proposed 10(j) rule could substantially improve our ability to achieve our reintroduction goal of establishing a viable, self-sustaining experimental population of Mexican wolves within the MWEPA.

#### 1.3.1.4 Expansion of the Blue Range Wolf Recovery Area (BRWRA) boundaries and elimination of the designation of the Primary Recovery Zone (PRZ) and Secondary Recovery Zone (SRZ) within the BRWRA

**(Alternatives Two and Four):** *Expand the BRWRA to include any or all of the Sitgreaves National Forest and the Payson, Pleasant Valley, and Tonto Basin Ranger Districts of the Tonto National Forests in Arizona and the Magdalena Ranger District of the Cibola National Forest in New Mexico. As part of*

*this expansion we would eliminate the designation of the Primary and Secondary Recovery Zone within the BRWRA.*

We propose to increase the size of the BRWRA in order to have more suitable, unoccupied wolf habitat available on public lands both for the initial release of captive-raised wolves and for the translocation of wolves captured pursuant to authorized management purposes. This expansion would incorporate national forest lands largely contiguous to the boundaries of the existing BRWRA and the Fort Apache Indian Reservation (FAIR). We have proposed eliminating the designation of the PRZ and SRZ within the BRWRA because expansion of the BRWRA, together with the proposal to conduct initial release of captive-raised wolves throughout the expanded BRWRA would obviate the need for this distinction.

The addition of all of the Sitgreaves National Forest and the Payson, Pleasant Valley, and Tonto Basin Ranger Districts of the Tonto National Forests in Arizona and the Magdalena Ranger District of the Cibola National Forest in New Mexico would add 5,300 square miles (13,727 $km^2$) to the BRWRA. Much of the potential suitable habitat in these national forests is in remote locations such as the Bear Wallow and Escudilla Wilderness Areas in the Apache-Sitgreaves National Forests, the Sierra Ancha, Salome, Hellgate, Mazatzal, Superstition, Four Peak and Salt River Canyon Wilderness Areas in the Tonto National Forest, and the Apache-Kid and Withington Wilderness Areas in the Cibola National Forest. Factors cited by researchers as important to the evaluation of the suitability of habitat for wolves include those that reduce the potential for wolf-human conflict. The absence of roads, low human population density and limited livestock grazing are habitat characteristics which increase the potential for the successful reestablishment of wolves by decreasing the potential for human caused wolf mortality (Mladenoff et al. 1995, Carroll et al. 2003, Oakleaf et al. 2006). Our experience indicates that naïve wolves are more likely to be involved in nuisance behavior following initial release (AMOC and IFT 2005). Placement of wolves with no wild experience ("naïve wolves) at approved release sites in wilderness or other remote locations is intended to lessen the likelihood of wolf interaction with humans or livestock during their initial post-release acclimation period. Experience in the Reintroduction Project has also shown that naïve wolves are more likely to be successful when released at sites in areas that have a relatively abundant prey base of elk, limited or no livestock calving in the area, and clear separation from established wolf pack territories. Release success is defined as a wolf that ultimately breeds and produces pups in the wild (Phillips et al. 2003, AMOC and IFT 2005).

The proposed addition of the Sitgreaves National Forest, the Payson, Pleasant Valley, and Tonto Basin Ranger Districts of the Tonto National Forest and the Magdalena Ranger District of the Cibola National Forest would result in a significant increase in available suitable unoccupied habitat in the BRWRA. This increase, combined with the proposed management change to allow the initial release of captive-raised wolves throughout the BRWRA, would provide us many more potential release sites than we have under the current regulations which limit the release of naïve wolves to the 1171 square miles (3033 $km^2$) PRZ. The PRZ is approximately 16 percent of the entire BRWRA as currently configured and only nine percent of the proposed expanded BRWRA. More potential release sites would provide significantly greater management flexibility to select the optimal site for an initial release or a translocation with the goal to: (1) maximize the probability of release success; (2) minimize the potential for wolf-human interaction, and: (3) minimize depredation opportunities.

A greater number of successful initial releases resulting in higher levels of recruitment of Mexican wolves from the captive population would be expected to improve the genetic composition of the experimental population. The reintroduced experimental population of Mexican wolves in the BRWRA has poor genetic variation with mean inbreeding levels that are 61 percent greater (0.1924 versus 0.1197) and founder genome equivalents that are 33 percent lower (2 versus 3.01) than in the captive population (78 FR 35664, June 13, 2013). There is evidence of strong inbreeding depression in the reintroduced population (Fredrickson et al. 2007) and computer simulations of the Blue Range population

incorporating the Mexican wolf pedigree suggest that this level of inbreeding depression may substantially reduce the viability of the population (Carroll et al. in press*;* Fredrickson et al. in prep). A larger and more viable wild population with greater gene diversity as a result of more animals having been successfully recruited from the captive population will be more resilient and can be managed more effectively in response to wolf-livestock conflict, nuisance behaviors, and mortality factors. Movement of more captive wolves into the wild would also lessen restrictions on the growth of the captive breeding population which, in the absence of additional holding facilities, is currently constrained by space limitations (Siminski and Spevak 2012). Similarly, the ability to select optimal sites in a larger area for the translocation of wolves with wild experience would help preclude the loss of genetically important animals due to management actions and facilitate the establishment of pack territories in currently unoccupied suitable habitat. Without an increase in the number of initial releases and without a better release success rate the improvement in the genetic composition of the Mexican wolf experimental population necessary to reverse the effects of inbreeding depression will not occur. The ability to select the optimum release site from a greater number of suitable sites distributed over a larger area would give us the management flexibility we require to expedite the movement of captive animals into the wild and to improve the success rate for initial releases. A greater number of successful initial releases would contribute to the population growth needed to ensure the resiliency and genetic health (representation) that are necessary for the establishment of a viable, self-sustaining Mexican wolf population within the Mexican Wolf Experimental Population Area.

### 1.3.2 Management Changes

We are proposing a number of management changes for implementation in a new Final 10(j) Rule in order to correct regulatory restrictions on the experimental population, particularly as related to genetic fitness (representation) and long-term adaptive potential (resiliency) of the population (Paquet et al. 2001,AMOC and IFT 2005 ,USFWS 2010).

#### 1.3.2.1 Initial releases of captive-raised Mexican wolves

**Alternatives One through Four:** *Allow initial release of Mexican wolves from captivity to the wild throughout the entire Blue Range Wolf Recovery Area (BRWRA). This change would eliminate the need to define the Primary Recovery Zone (PRZ) and Secondary Recovery Zone (SRZ) within the BRWRA.*

We propose to conduct initial releases of captive-raised Mexican wolves throughout the BRWRA and to eliminate the distinction between the PRZ and SRZ within the BRWRA. This change would provide us the management flexibility to select the optimal release site in a larger area that maximizes the probability of success for a given release. Because the entire BRWRA would be available for initial release of captive-raised wolves the distinction of the Primary or secondary recovery zone would be made obsolete.

Our implementation of the 1998 Final Rule, which limits the initial release of captive-raised wolves to the PRZ, a comparatively small subunit (16 percent) of the BRWRA, has resulted in a lack of management flexibility over the course of the Reintroduction Project. Release sites in approximately half of the PRZ are ranked among the lowest in overall suitability when compared to sites in the Gila and Aldo Leopold Wilderness Areas in the SRZ which are currently available only for translocations (IFT 2009). The southern half of the PRZ is situated below the Mogollon Rim where livestock are present year round and deer, rather than elk, are the primary native prey species (USFWS 2000a). Although deer were expected to be the primary native prey species utilized by wolves when the reintroduction project began observation of reintroduced Mexican wolves suggest that elk is their preferred prey species and constitute the majority of their diet (Paquet et al. 2001, AMOC and IFT 2005, Reed et al. 2006, Merkle et al. 2009). Wolves are territorial and defend large areas from other wolves (Mech and Boitoni 2003). The reintroduced wild population of wolves has established home ranges within the PRZ (USFWS 2011) and the density of wolves in the Arizona portion of the BRWRA is greater than the New Mexico portion. As

a result suitable sites for the initial releases of captive-raised wolves in the PRZ have become increasing difficult to identify. The number of captive-raised wolves released into the wild has significantly decreased from the early years of the reintroduction project. When a large area of unoccupied suitable habitat was available in the PRZ we were able to release from captivity 87 wolves in the seven years from1998 through 2004. In contrast only one wolf was released from captivity in the seven year period from 2007 through 2012 (Table 1-1).

Factors cited by researchers as important to the evaluation of the suitability of habitat for wolves include those that reduce the potential for wolf-human conflict. The absence of roads, low human population density and limited livestock grazing are habitat characteristics which increase the potential for the successful reestablishment of wolves by decreasing the potential for human caused wolf mortality (Mladenoff et al. 1995, Carroll et al. 2003, Oakleaf et al. 2006). Our experience indicates that naïve wolves are more likely to be involved in nuisance behavior following initial release (AMOC and IFT 2005). Placement of wolves with no wild experience ("naïve" wolves released from captivity) at approved release sites in wilderness or other remote locations is intended to lessen the likelihood of wolf interaction with humans or livestock during their initial post-release acclimation period. Experience in the Reintroduction Project has also shown that naïve wolves are more likely to be successful when released at sites in areas that have a relatively abundant prey base of elk, limited or no livestock calving in the area, and clear separation from established wolf pack territories. Release success is defined as a wolf that ultimately breeds and produces pups in the wild (Phillips et al. 2003, AMOC and IFT 2005).

Paquet et al. (2001) stated in the 3-Year Review that the small size of the PRZ was hindering rapid establishment of the wild population and recommended that the Final Rule be modified to allow releases in the SRZ. AMOC/IFT concluded in the 5-Year Review that the provision governing release of wolves solely into the PRZ "restricts the pool of available release candidates, restricts release of wolves for management purposes such as genetic augmentation, and causes public perception issues between the states of Arizona and New Mexico, and thus is not sufficient to achieve the current population objective" (AMOC and IFT 2005). The availability of more potential release sites throughout the entire BRWRA would provide significantly greater management flexibility to select the optimal site for an initial release with the goal to: (1) maximize the probability of release success; (2) minimize the potential for wolf-human interaction, and: (3) minimize depredation incidents.

A greater number of successful initial releases resulting in higher levels of recruitment of Mexican wolves from the captive population would be expected to improve the genetic composition of the experimental population. The reintroduced experimental population of Mexican wolves in the BRWRA has poor genetic variation with mean inbreeding levels that are 61 percent greater (0.1924 versus 0.1197) and founder genome equivalents are 33 percent lower (2 versus 3.01) than in the captive population (78 FR 35664, June 13, 2013). There is evidence of strong inbreeding depression in the reintroduced population (Fredrickson et al 2007) and computer simulations of the Blue Range population incorporating the Mexican wolf pedigree suggest that this level of inbreeding depression may substantially reduce the viability of the population (Carroll et al. in press*;* Fredrickson et al. in prep). A larger and more viable wild population with greater gene diversity as a result of more animals having been successfully recruited from the captive population will be more resilient and can be managed more effectively in response to wolf-livestock conflict, nuisance behaviors, and mortality factors. Movement of more captive wolves into the wild would also lessen restrictions on the growth of the captive breeding population which, in the absence of additional holding facilities, is currently constrained by space limitations (Siminski and Spevak 2012). Without an increase in the number of initial releases and without a better release success rate the improvement in the genetic composition of the experimental population necessary to reverse the effects of inbreeding depression will not occur.

Opening the entire BRWRA to the release of captive-raised wolves would allow us to select optimal release sites in remote locations such as the Gila and Aldo Leopold Wilderness Areas in the Gila National Forest. Combining this management change with the proposed expansion of the BRWRA to include the Sitgreaves National Forest and portions of the Tonto and Cibola National Forests would significantly increase the number of available potential release sites in remote locations, including the wilderness areas of these forests. The ability to select the optimum release site from a greater number of suitable sites distributed over a larger area would give us the management flexibility we require to expedite the movement of captive animals into the wild and to improve the success rate for initial releases. A greater number of successful initial releases would contribute to the population growth needed to ensure the resiliency and genetic health (representation) that are necessary for the establishment of a viable, self-sustaining Mexican wolf population within the Mexican Wolf Experimental Population Area.

#### 1.3.2.2 Natural dispersal of wolves from the Blue Range Wolf Recovery Area (BRWRA) into the Mexican Wolf Experimental Population Area (MWEPA); Management of Mexican wolves in the MWEPA

**Alternatives One through Four:** *Allow Mexican wolves to disperse naturally from the BRWRA into the MWEPA and occupy the MWEPA.*

*Manage Mexican wolves in the MWEPA by reducing conflicts with humans and land uses through such means as hazing, trapping, translocations, and removals.*

We propose to change the regulations that address the dispersal and management of wolves within the MWEPA in order to better support natural wolf biology and behavior and thereby promote the natural growth of the experimental population of Mexican wolves. Under Alternatives One through Four we would implement management changes to allow Mexican wolves to naturally disperse from the BRWRA into the MWEPA and to occupy the MWEPA. We would not remove wolves on public or private land in the MWEPA except in the case of depredation or other nuisance behavior that cannot be effectively managed through non-removal techniques. We would capture and remove wolves on tribal land if requested by the tribal government. We would also capture and translocate wolves on Federal land pursuant to an authorized management purpose and, if requested by the private landowner or tribal government, we would conduct initial release of captive wolves on private or tribal land within the MWEPA.

Unless a wolf becomes a breeder within its natal pack it will disperse (Mech and Boitani 2003). Wolves naturally disperse from their natal pack in response to a variety of factors including food competition, mating opportunities, environmental disruptions, social aggression and/or pressures associated with pack dominance hierarchy (Boyd and Pletscher 1999, Mech and Boitani 2003). Wolves of both sexes disperse, some as young as 5 months of age while others may remain with the pack for up to 3 years or occasionally longer (Mech and Boitani 2003). The potential benefits of dispersal include increased reproductive success, decreased probability of inbreeding, release from intraspecific competition for resources and range expansion (Shields 1987, Boyd and Pletscher 1999). Successful dispersing wolves are those that find a mate and either usurp (take from another wolf), carve out (from an existing territorial mosaic), or find an unoccupied (by other wolves) area with adequate food resources to establish a territory (Mech and Boitani 2003). Wolves are highly territorial and dispersal from established packs drives the colonization or recolonization of areas unoccupied by breeding wolves (Fritts and Mech 1981, Boyd and Pletscher 1999, Mech and Boitani 2003). Dispersal and colonization/recolonization of unoccupied habitat expands the species' range (Mech and Boitani 2003) and dispersal behavior is vital to establishing long-term population viability (Boyd and Pletscher 1999). Neighboring wolf packs tend to be genetically related but infrequent (once per generation) immigration of dispersers from another population can result in a degree of genetic mixing between unrelated wolves (Mech and Boitani 2003).

Under the 1998 Final Rule Mexican wolves are not allowed to disperse to establish territories outside of the BRWRA. Wolves are captured and removed from the MWEPA regardless of whether they have been engaged in depredation incidents or nuisance behavior. Our 5-Year Review of the Mexican Wolf Blue Range Reintroduction Project found that removal of wolves for no other cause than being outside the BRWRA:

- increases the cost of the overall recovery program;
- fosters the erroneous perception that all wolves can be contained within artificial boundaries
- is in direct conflict with management philosophies employed by the USFWS on other wolf reintroduction and recovery projects;
- excludes habitat that could enhance recovery efforts, and;
- Artificially restricts natural dispersal (AMOC and IFT 2005).

Our proposals to: (1) allow natural dispersal from the BRWRA into the MWEPA; (2) conduct management removals only in the case of depredation or other nuisance behavior that cannot be effectively managed through non-removal techniques or if requested by tribal government, and; (3) conduct translocations on public land within the MWEPA with the option to translocate or release wolves directly from captivity on tribal or private land when requested by the landowner, provides us the increased management flexibility to allow the reintroduced wild population of Mexican wolves to expand both numerically and spatially. A population that is larger and more widely dispersed across a broader landscape is more resilient to stochastic demographic and environmental events as well as human caused mortality. These proposed management changes would remove artificial constraints on the natural growth of the Mexican wolf population. We consider natural population growth fostered by dispersal and recolonization of areas of suitable habitat outside of the BRWRA and augmented by assisted growth from translocations and initial releases necessary for the establishment of a viable, self-sustaining Mexican wolf experimental population within the MWEPA.

#### 1.3.2.3 Modification to the provisions for take (see the definition of "take" provided in the List of Definitions) of a Mexican wolf within the Mexican Wolf Experimental Population Area (MWEPA; see Appendix B. Proposed Rule)

**Alternatives One through Four:**

*Identify section 6 of the Act as authorizing language for take pursuant to 50 CFR 17.31 for state wildlife agencies with authority to manage Mexican wolves under the nonessential experimental population rule*.

*Clarify that an individual can be authorized to take Mexican wolves under specific circumstances*.

*Clarify allowable take for Federal agencies and authorized personnel*.

*Revise the conditions that determine when we would issue a permit to livestock owners or their agents to allow take of Mexican wolves that are engaged in the act of killing, wounding or biting livestock on public lands allotted for grazing from ''6 breeding pairs'' to ''100 Mexican wolves'' to be consistent with our population objective of establishing a population of at least 100 wolves.*

*Revise the prohibitions for take such that taking a Mexican wolf with a trap, snare, or other type of capture device within occupied Mexican wolf range is prohibited and will not be considered unavoidable or unintentional take, unless due care was exercised to avoid injury or death to a Mexican wolf*.

**Alternative Four:**

*Include provisions for take by pet owners of any Mexican wolf engaged in the act of killing, wounding, or biting pets on private or tribal land anywhere within the MWEPA; provided that evidence of a freshly wounded or killed pet by wolves is present*.

*Include provisions for the issuance of permits on private or tribal land anywhere within the MWEPA to allow livestock owners or their agents to take any Mexican wolf that is present on private or tribal land and what conditions must be met before such a permit is issued*.

Alternatives One through Four include five proposed technical corrections to the language of the 1998 Final Rule which are consistent with current wolf management practices. Alternative Four contains two additional proposals that would modify the directives established under the 1998 Final Rule for the take of Mexican wolves that are in the experimental population. We intend to modify the directives that address the provisions for the take of Mexican wolves in the experimental population in order to provide clarity and consistency in our take determinations, to anticipate Mexican wolf populations that are larger and more robust and to decrease human intolerance of wolves. Some form of wolf management is usually necessary when wolves prey on livestock or engage in other nuisance behavior (Fritts et al. 2003). Accordingly we recognize that wolf control is a necessary component of wolf recovery. Clear guidelines governing authorized wolf control actions improve the ability of agencies to manage wolves by defining the management response to depredation incidents and nuisance behavior. Clear guidelines can also help reduce human animosity and illegal take, which may occur in the absence of effective control measures (Mech 1995).

Wolf management in response to depredations and nuisance behavior can take several forms including harassment, capture and removal or lethal control. Removal of wolves to address conflicts with livestock (depredation incidents) or humans (nuisance) is an essential component of reintroduction efforts (AMOC and IFT 2005). Lethal control is still usually the only practical course under most conditions that involve larger populations of wolves (Mech 1995). Recognizing the need for landowners to have the ability to protect their pets and livestock under certain specific circumstances we propose in Alternative Four to include in the new 10(j) rule provisions for the take of wolves actually engaged in the act of killing, wounding, or biting pets and for the issuance of conditions based permits to allow livestock owners or their agents to take any wolf that is present on private or tribal land anywhere within the MWEPA. The conditions would include: minimum population size or population trend of Mexican wolves present in the MWEPA or other established populations based on the most recently reported population count; other relevant measures of population status such as genetic diversity; documentation by the Service or our authorized agent of previous loss or injury of livestock on the private or tribal land, caused by wolves; implementation of agency efforts to resolve the problem and determination that conflict is likely to continue; and enactment of this provision by a formal statement from the Service.

The overarching objective of the reintroduction project is to achieve an appropriate balance between enabling wolf population growth and minimizing nuisance and depredation impacts on local stakeholders (AMOC and IFT 2005). While wolf control undertaken by government agency is the primary tool we use to manage problem wolves, control by landowners or their agents is an essential element to the ultimate success of the project. Aversive and preventative non-lethal techniques include: the use of fladry and hazing; the use of non-lethal projectiles; carcass disposal management; livestock husbandry assistance; the use of calving pastures, and; purchase of feed/hay to reduce the risk of depredation. Lethal take by landowners, livestock and pet owners or their agents under specific limited circumstances provides another measure that is considered a necessary form of wolf control. Authorization of these techniques along with a pro-active and effective response by the Service to reports of depredation incidents or nuisance behavior builds trust and cooperation with the reintroduction project and greater social tolerance for wolves by the affected community (Bangs et al. 1998, Mech 1995, Fritz et al. 2003). Improved local acceptance for wolf reintroduction by landowners and the public would be expected to reduce the number

of illegal shootings, which are the highest percentage of Mexican wolf mortalities (Figure 1-22, Figure 1-23). We expect that modifying the provisions governing the take of Mexican wolves will reduce the likelihood of indiscriminate, illegal killing of wolves and will substantially lessen the overall risk of human caused wolf mortality. Reduced human caused mortality, would substantially contribute to the higher population growth rate necessary for the establishment of a viable, self-sustaining Mexican wolf experimental population.

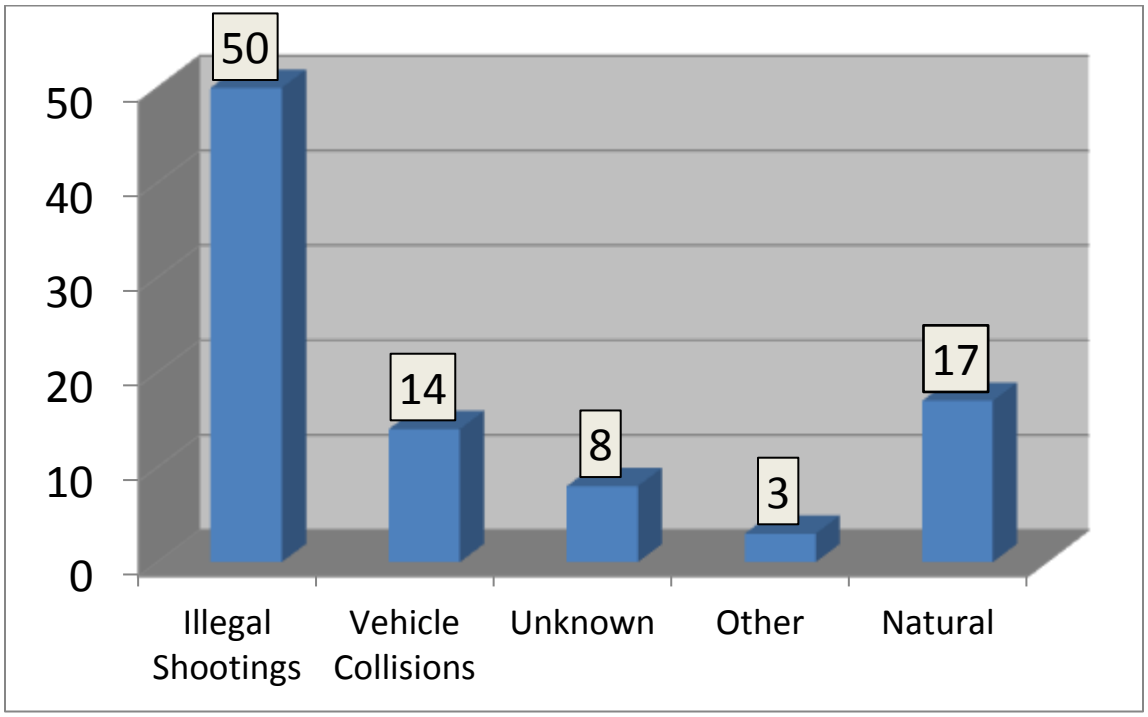


**Figure 1-22. Mexican wolf mortalities (1998-2012)**

**Figure 1-23. Illegally killed Mexican wolf with a collar (Credit: U.S. Fish and Wildlife Service)**

### 1.3.3 Develop and implement management actions on private land within the Mexican Wolf Experimental Population Area (MWEPA) by the Service or an authorized agency to benefit Mexican wolf recovery in voluntary cooperation with private landowners

**Alternatives One through Four:** *Develop and implement management actions on private land within the MWEPA by the Service or an authorized agency to benefit Mexican wolf recovery in voluntary cooperation with private landowners, including but not limited to initial release and translocation of wolves if requested by the landowner. Wolves present on private lands within the MWEPA would not be subject to management removal except in the case of depredation or other nuisance behavior that cannot be effectively managed through non-removal techniques.*

We propose to enter into agreements for the management of wolves on private land within the MWEPA in order to engage willing landowners as partners in actions to benefit the expanded reintroduction of wolves. The 1998 Final Rule did not contain this provision because Mexican wolves were not allowed to inhabit the MWEPA outside of the Blue Range Wolf Recovery Area (BRWRA). Agreements with private landowners would be intended to; build trust and cooperation between private landowners and the Service; minimize wolf management removals; forestall illegal human caused mortalities; and, increase social tolerance for wolves. Although public lands provide the majority of potential suitable habitat for wolves within the MWEPA there are also large tracts of private land that contain habitat that could support wolves. Except in cases of depredation incidents and nuisance behavior we do not intend to remove wolves found on private land within the MWEPA. We propose to allow wolves to naturally disperse from the BRWRA into the MWEPA and to translocate wolves within the MWEPA as needed pursuant to an authorized management purpose. If we implement these proposals management agreements with private landowners would be important not only to benefit wolf reintroduction but to also establish protocols and procedures to minimize or preclude depredation incidents and nuisance behavior. Agreements with landowners who have private landholdings containing suitable habitat adjacent to large tracts of national forest or BLM controlled land are expected to be particularly important. Management agreements can specify pro-active management actions (i.e., livestock husbandry techniques, carcass removal, hazing, and provision of range riders) that may serve to preclude and/or minimize wolf depredation or nuisance behavior and benefit both the landowner and the Service's wolf recovery efforts. For these reasons agreements with private landowners to implement management actions for Mexican wolves are intended to: (1) build trust and cooperation between private landowners and the Service; (2) minimize wolf management removals; (3) forestall illegal human caused mortalities; and, (4) increase social tolerance for wolves. All of these outcomes would be expected to substantially contribute to the achievement of our objective to establish a viable, self-sustaining experimental population of Mexican wolves within the MWEPA.

### 1.3.4 Develop and implement management actions on tribal land within the Mexican Wolf Experimental Population Area (MWEPA) by the Service or an authorized agency in voluntary cooperation with tribal governments

**Alternatives One through Four:** *Develop and implement management actions on tribal land within the MWEPA by the Service or an authorized agency in voluntary cooperation with tribal governments including but not limited to initial release, translocation, capture, and removal of Mexican wolves if requested by the tribal government.*

The Service acknowledges the trust responsibility and treaty obligations of the United States toward Indian tribes and tribal members and its government-to-government relationship with tribes in order to achieve the common goal of promoting and protecting the health of ecosystems, as defined by Secretarial Order 3206 *American Indian Tribal Rights, Federal-Tribal Trust Responsibilities* (June 5, 1997).

Pursuant to Secretarial Order 3206, we recognize, respect, and shall consider the value that tribal traditional knowledge provides to federal land management decision making processes. In accordance with this order we will continue to manage any Mexican wolf present within the MWEPA under the guidance contained in section (k)(10) the 1998 Final Rule so that; "If any wolves move onto tribal reservation land outside the designated recovery area(s), but within the Mexican Wolf Experimental Population Area, the Service, or an authorized agency, will develop management actions in cooperation with the tribal government including capture and removal of the wolf or wolves if requested by the tribal government." We would seek to continue the cooperative agreement entered into in 2000 with the White Mountain Apache Tribe to allow wolves to occupy the Fort Apache Indian Reservation and, because we now propose to allow wolves to naturally disperse from the BRWRA, we would seek to enter into cooperative agreements for the management of wolves with other tribes within the MWEPA. These cooperative agreements would be subject to successive renewal, in which the Tribe has the option of allowing or prohibiting wolf re-establishment, whether through natural dispersion, initial release from captivity, or translocation, on recognized tribal lands or reservations.

With cooperative management agreements in place tribal lands could provide a substantial contribution to the achievement of our reintroduction population goals. These agreements can specify pro-active management actions (i.e., livestock husbandry techniques, carcass removal, hazing, and provision of range riders) that may serve to preclude and/or minimize wolf depredation or nuisance behavior and benefit both the tribal government and the Service's wolf recovery efforts. For these reasons cooperative agreements with tribal governments to implement management actions for Mexican wolves are intended to: (1) build trust and cooperation between private landowners and the Service; (2) minimize wolf management removals; (3) forestall illegal human caused mortalities; and, (4) increase social tolerance for wolves. All of these outcomes would be expected to substantially contribute to the achievement of our objective to establish a viable, self-sustaining experimental population of Mexican wolves within the MWEPA.

### 1.3.5 Implementation of a management plan *(Mexican Wolf Management Plan)* for the Mexican wolf for those portions of Arizona and New Mexico outside of in the Mexican Wolf Experimental Population Area (MWEPA).

**Alternatives One through Four:** *Implement a management plan (Mexican Wolf Management Plan) for the Mexican wolf for those portions of Arizona and New Mexico outside of the MWEPA. Under Alternatives One and Two the proposed management plan would be implemented for those areas of Arizona and New Mexico north of Interstate 40 and south of Interstate 10. Under Alternatives Three and Four the proposed management plan would be implemented only for the area of Arizona and New Mexico north of Interstate 40.*

We propose to implement a management plan for Mexican wolves that disperse from Mexico into those portions of Arizona and New Mexico outside of the MWEPA where they are listed as an endangered species. The intent of the management plan is to describe our strategy to conserve and promote the recovery of the Mexican wolf while responding to reports of depredation and wolf-human/wolf-livestock interaction in a timely, professional, consistent and effective manner.

Dispersal and natural re-colonization of areas of suitable habitat in southern Arizona and New Mexico (south of Interstate Highway 10) are possible if the Mexican government succeeds in establishing populations of Mexican wolves in their planned reintroduction areas. The designated reintroduction area (Chihuahua/Sonora) in Mexico where the initial release of five wolves occurred in October, 2011, extends north to within approximately 30 miles (48 km) south of the United States border at the Arizona/New Mexico state line. Dispersal and natural re-colonization of areas of suitable habitat in northern Arizona

and New Mexico (north of Interstate Highway 40) from a reintroduced population of Mexican wolves in Mexico is considered possible but less likely to occur. We propose to implement the *Mexican Wolf Management Plan*, in collaboration with Federal, State, and Tribal Partners through an ESA Section 10 (a) (1) (A) research and recovery permit and the provision of Federal funding. The actions specified in the management plan and the Federal funding that would be provided to state partner agencies are considered supplemental to management activities already authorized and funded under 50 C.F.R. 17.21 C (5) and Cooperative Agreements with the states of Arizona and New Mexico. The purpose of the management plan is to:

- Conserve Mexican wolves that have naturally dispersed from Mexico into the United Sates and inhabit parts of Arizona and New Mexico outside of the MWEPA;
- enhance the recovery of Mexican wolves in suitable portions of their historical range;
- provide uniform interagency management guidelines for determining appropriate management actions that contribute to the recovery of the Mexican wolf in Arizona and New Mexico;
- guide managers in making prompt and reasonable decisions on Mexican wolf management by integrating wolf recovery objectives with other land uses and values;
- provide the interagency management guidelines necessary to respond to reports of wolf-human and wolf-livestock interactions, thereby mitigating potential conflict;
- fund state, tribal and Federal agency partners programs that assist and collaborate in the management activities necessary to enhance the survival and propagation of the Mexican wolf in Arizona and New Mexico, and;
- Address local and landowner concerns associated with natural wolf recolonization by demonstrating that the Service and our partners are able to act quickly to manage wolves and resolve conflicts with humans.

Under the provisions of the management plan we intend to manage Mexican wolves in those portions of Arizona and New Mexico outside of the MWEPA in a manner that:

- Takes proactive measures to prevent livestock depredation incidents and inappropriate wolf-human interactions and to responds to reports of those events, should they occur, in a timely, professional manner.
- reduces conflicts between wolves and human concerns, recognizing this as a key component to successful wolf recovery in Arizona and New Mexico;
- reduces state and local opposition to the establishment of wolf populations, and;
- Reduces the likelihood of indiscriminate, illegal killing of wolves and substantially lessens the overall risk of wolf mortality.

The proposed *Mexican Wolf Management Plan* provides us a greater range of options under section 10 (a)(1)(A) of the ESA to prevent or respond to reports of livestock depredation incidents or nuisance behavior. Without an approved management plan for Mexican wolves outside of the MWEPA a 10(a)(1)(A) permit authorizing actions such as harassment or capture and translocation of problem wolves cannot be issued. Without management of problem wolves, human tolerance for all wolves, including the majority that does not depredate on livestock, decreases (Mech 1995). Implementation of the management plan through a 10(a)(1)(A) permit and the provision of federal funding to partner (state and tribal agencies) is intended to reduce human animosity and illegal actions towards the wolf population and to adequately monitor and manage human-caused mortality. Effective management of Mexican

wolves in those areas of Arizona and New Mexico outside of the MWEPA is expected to conserve and promote their survival while being responsive to reports of depredation incidents and nuisance behavior.

**Figure 1-24. Mexican Wolf in the Blue Range Wolf Recovery Area (Credit: Mexican Wolf Interagency Field Team)**

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# 2 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

The National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) implementing regulations (40 CFR 1502.14) provide guidance to Federal agencies on the consideration of alternatives in an Environmental Impact Statement (EIS). In accordance with this guidance the range of alternatives considered should include reasonable alternatives, which must be rigorously and objectively explored, as well as other alternatives that are eliminated from detailed study. To be "reasonable," an alternative must satisfy the stated purpose of, and need for, the Proposed Action and should be technically and economically feasible. The No Action Alternative serves as a baseline, or representative "status quo". The purpose of including a No Action Alternative in an environmental impact analysis is to ensure that agencies compare the potential impacts of the proposed Federal action to the known impacts of maintaining the status quo.

This chapter presents the Proposed Action and alternatives that we brought forward for further analysis, the alternatives we eliminated from further study, and discusses the criteria we used to make those decisions. We have developed a range of alternatives, including the Proposed Action and No Action alternative, for our proposal to: (1) modify the geographic boundaries established for the Mexican wolf reintroduction in the 1998 Final Rule; (2) modify the management regulations established in the 1998 Final Rule which govern the release, translocation, natural dispersal, and take (see the definition of "take" provided in the List of Definitions) of Mexican wolves, and; (3) implement a management plan for Mexican wolves for those areas of Arizona and New Mexico that are outside of the Mexican Wolf Experimental Population Area (MWEPA). These actions would be implemented through a Final Nonessential Experimental Rule (see Appendix B for the proposed rule), an Endangered Species Act (ESA) Section 10 (a)(1)(a) research and recovery permit, and/or provisions for federal funding.

NEPA regulations require that the Federal action proponent study methods to mitigate adverse environmental impacts which may result from going forward with the Proposed Action or an alternative (40 C.F.R. § 35 1502.16). Additionally, an EIS is required to include study of appropriate mitigation measures not already included in the Proposed Action or alternatives (40 C.F.R. § 1502.14 [h]). The alternatives we consider in this EIS include mitigation measures intended to reduce the environmental effects that could occur from their implementation.

## 2.1 ALTERNATIVE SELECTION CRITERIA

The alternatives we selected for further consideration and evaluation were developed based on the experience and information we have gained since we began the reintroduction of Mexican wolves in the United States in 1998, the recommendations of our three and five year program reviews (Paquet et al. 2001, AMOC and IFT 2005) and our 2010 Conservation Assessment (USFWS 2010). We also used input received from the public and partner agencies during scoping (Appendix G). We used the following criteria to evaluate whether an alternative under consideration meets the purpose of, and need for, the Proposed Action:

- Contributes to improving the resiliency of the experimental population of Mexican wolves.
- Contributes to improving the representation and genetic health of the experimental population of Mexican wolves.
- Is necessary for, and/or contributes to, reaching our population objective to establish a viable, self-sustaining experimental population of Mexican wolves as defined in the 1982 Mexican Wolf Recovery Plan.
- Provides increased management flexibility to the Service in decisions related to the release, translocation, take and removal of Mexican wolves.

- Accommodates natural dispersal behavior and facilitates the colonization of new areas of suitable habitat.
- Improves the effectiveness of the Reintroduction Project in implementing actions that contribute to the establishment of a viable, self-sustaining wild population of Mexican wolves as defined in the 1982 Mexican Wolf Recovery Plan.
- Facilitates the interagency cooperation necessary to successfully manage and enhance Mexican wolf recovery throughout the states of Arizona and New Mexico.
- Promotes management actions for Mexican wolves that have dispersed into the United States from Mexico into those areas of Arizona and New Mexico outside of the Mexican Wolf Experimental Population Area (MWEPA) that are intended to conserve and promote their survival while being responsive to reports of depredation incidents and nuisance behavior.
- Implementation is expected to be achievable within a reasonable time frame supportive of the Reintroduction Project goal of the establishment of a viable, self-sustaining experimental population of Mexican wolves that will serve as the "first step" toward recovery of the Mexican wolf in the wild.

We rejected alternatives that would not:

- Maximize the potential for successful establishment of new wolf packs in wilderness areas or other areas that have limited or no livestock grazing and minimal human use.
- Minimize or mitigate the potential for wolf-human interactions.
- Minimize or mitigate the potential for wolf depredation incidents.
- More rapidly increase the total number of wolves in the experimental population.
- Improve the recruitment of captive-raised wolves into the experimental population.

## 2.2 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

We evaluated a number of alternatives for the specific components (Boundary Changes, Management Changes, and Implementation of a Management Plan) of our Proposed Action. The alternatives identified in this section were eliminated from further consideration because, after careful review of each in light of the identified criteria, we determined that either they were not technically feasible or they were not necessary to meet the purpose and need for the Proposed Action.

### 2.2.1 Boundary Changes

- **Expand the Primary Recovery Zone (PRZ) boundaries within only the Apache National Forest in Arizona**. This alternative would expand the boundaries of the existing PRZ to incorporate more land within the Apache National Forest in Arizona with additional initial release sites suitable for captive raised wolves. The PRZ is currently bounded on the north by the Apache-Greenlee County line; on the east by the Arizona-New Mexico State line; on the south by the San Francisco River (eastern half) and the southern boundary of the Apache National Forest (western half; and on the west by the Greenlee-Graham County line (San Carlos Apache Reservation boundary (Figure 1-5). Expansion of the PRZ boundaries is feasible where the additional land to be incorporated is within the National Forest. However, the release sites within these areas have been evaluated and scored poorly in overall suitability based on the specific site selection criteria (USFWS 2009). Potential additional release sites in this part of the Apache National Forest in Arizona are constrained by the presence of already established wolf pack territories, proximity to Blue Range Wolf Recovery Area (BRWRA) boundaries, and/or the proximity to livestock and/or humans. Use of this part of the Forest for the

initial of Mexican wolves would not maximize the potential for successful establishment of new wolf packs in wilderness areas or other areas that have limited or no livestock grazing and minimal human use. Nor would release at sites within these districts minimize or mitigate the potential for wolf-human interactions. For these reasons we rejected this alternative because it did not satisfactorily meet the established selection criteria and therefore does not meet the purpose and need for the Proposed Action.

- **Expand the BRWRA to include all of the Tonto National Forest.** This alternative would expand the boundaries of the existing BRWRA to include all of the Tonto National Forest in Arizona. Inclusion of the whole Forest would add an additional 4,489 square miles (11,627 $km^2$ to the BRWRA. The Tonto National Forest spans a range of ecosystems from the Sonoran Desert through a variety of chaparral and piñon pine/juniper up to the mixed conifer and ponderosa pine of the Mogollon Rim. The majority of quality wolf habitat and designated wilderness areas are within the Payson, Pleasant Valley, and Tonto Basin Ranger Districts which are on the north and eastern edges of the Forest. The Cave Creek, Globe and Mesa Ranger Districts of the Forest are on the west and southern edges of the Forest where Sonoran desert and chaparral vegetation types are predominant. These ranger districts support a number of locations where the public has found motorized recreational use most enjoyable due to the proximity to the metropolitan Phoenix area and the varied desert terrain. Highly concentrated motorized use occurs at these locations and prohibitions on cross-country travel are difficult to enforce (USFS 2012). Expanding the BRWRA to include the use of the Cave Creek, Globe and Mesa Ranger Districts of the Tonto National Forest for the initial of Mexican wolves would not maximize the potential for successful establishment of new wolf packs in wilderness areas or other areas that have limited or no livestock grazing and minimal human use. Nor would release at sites within these districts minimize the potential for wolf-human interactions. For these reasons we rejected this alternative because it did not satisfactorily meet the established selection criteria and therefore does not meet the purpose and need for the Proposed Action.

- **Expand the BRWRA to include the Fort Apache Indian Reservation (FAIR) of the White Mountain Apache Tribe (WMAT).** In 2000 the WMAT entered a cooperative agreement with the Service to allow wolves to occupy its Tribal land. This cooperative agreement is subject to successive renewal, in which the Tribe has the option of allowing or prohibiting wolf re-establishment on the Fort Apache Indian Reservation (FAIR). In 2003, a pair of adult wolves, with previous wild experience (e.g., translocations), and four dependent pups without wild experience (e.g., initial released animals) were released on the FAIR. Subsequently in 2005 a single female wolf was translocated to the FAIR; however, a routine program of initial releases and/or translocations onto the FAIR has not been established. Under our Proposed Action we would seek to continue the cooperative agreement entered into in 2000 with the WMAT to allow wolves to occupy the FAIR and we would conduct initial releases and translocations on the FAIR subject to WMAT approval. However, we do not consider it feasible to include the WMAT as part of the BRWRA because the FAIR is not land under Federal control. The WMAT maintains its own Mexican wolf management program and, under the Tribe's sovereign authority, has the option of allowing Mexican wolves that enter the Reservation to either remain or be removed. Continued occupancy of wolves on the FAIR is dependent upon tribal agreement. Therefore, we do not consider that an expansion of the BRWRA to include the FAIR would provide the Service the necessary increased flexibility for management of the Reintroduction Project in decisions related to initial release of captive-raised wolves, translocation of wolves, natural dispersal of wolves, take of wolves, and management removals. For this reason this alternative does not satisfactorily meet the established selection criteria and therefore does not meet the purpose and need for the Proposed Action.

- **Establish a new Wolf Recovery Area for the reintroduction of Mexican wolves within the Lincoln National Forest in New Mexico.** The 1,698 square mile (4398.9 $km^2$) Lincoln National Forest in south-eastern New Mexico lies within the Mexican wolf's probable historical range and contains portions of four mountain ranges that provide potential suitable habitat for wolves. Mule deer and elk are abundant in the Forest and the Capitan Mountains and White Mountain Wilderness Areas provide protected primitive areas with no roads, low human usage, and limited livestock grazing that could provide optimal initial release and translocation sites. The establishment of a wolf recovery area where we would conduct initial release of captive-raised wolves in the Lincoln National Forest, combined with the proposed management change to allow wolves to naturally disperse from the BRWRA into the surrounding Mexican Wolf Experimental Population Area (MWEPA) could lead to the establishment of packs of Mexican wolves in areas of suitable habitat in the Sacramento, Capitan, Guadalupe and Sierra Blanca Mountains. Our proposal to conduct translocations within the MWEPA and/or direct initial release of captive-raised wolves under agreements with tribal or private landowners could also serve as an adjunct to natural dispersal, translocation and initial release of wolves into the national forest.

  Consideration of the Lincoln National Forest as a wolf recovery area for the initial release of captive-raised Mexican wolves must also take into account that the Forest is managed for multiple uses including recreation, grazing and timber operations (USFS 1986). With the exception of the White Mountains Wilderness Area all of the Forest is subject to grazing and timber harvest. Numerous private in-holdings are scattered throughout the Forest and the Mescalero Apache Indian Reservation, which bisects the Smokey Bear and Sacramento Mountains Ranger Districts, runs cattle operations, the Ski Apache ski resort and the Inn of the Mountain Gods Resort Casino. Because suitable habitat and natural ungulate prey is available wolves could naturally disperse from the BRWRA to recolonize portions of the Lincoln National Forest. However, no large blocks of potential suitable habitat are available to support the establishment of territories by recolonizing wolves in between the mountains of the BRWRA and the Lincoln National Forest. Instead, we would expect any wolf packs that were to become established in the Lincoln National Forest to be semi-disjunctive with linkage to the Mexican wolves in the BRWRA maintained by dispersal across the Rio Grande River valley and White Sands Missile Range

  Because of the bisected nature of the two ranger districts, numerous private in-holdings and significant grazing and logging operations the establishment of a wolf recovery area in the Lincoln National Forest for the initial release of captive-raised Mexican wolves would neither maximize the potential for successful establishment of new wolf packs in wilderness areas or other areas that have limited or no livestock grazing and minimal human use nor minimize the potential for wolf-human interactions. Additionally, because of the expected semi-disjunctive relationship of any packs of Mexican wolves established in the Lincoln to the wolves established in the BRWRA we do not consider its designation as a wolf recovery area necessary to achieve our reintroduction project goal of establishing a viable, self-sustaining experimental population within the MWEPA. For these reasons we rejected this alternative because it did not satisfactorily meet the established selection criteria and is not necessary to meet the purpose and need for the Proposed Action.

- **Expand the MWEPA to include the area in Arizona and New Mexico north of Interstate-40 to the state boundary with Utah and Colorado.**

  A MWEPA extended north to the state boundaries with Utah and Colorado would contain core areas of suitable wolf habitat that encompass the Grand Canyon and large areas of adjacent public lands in northern Arizona. In northern New Mexico large areas of potential suitable habitat in national forest lands adjacent to private lands with conservation management would be included (Carroll et al.

2006). Within the Colorado Plateau ecoregion, which extends south into northern Arizona and New Mexico, the primary wild ungulate prey species available to support dispersing and/or recolonizing wolves are elk (*Cervus elaphus*) and mule deer (*Odocoileus hemionus).* The largest elk herds in North America are found here and deer and elk are sympatric throughout much of the region (Watkins et al. 2007). The counties in the northern part of Arizona and New Mexico (north of I-40) are primarily rural, with few incorporated municipalities and, with the exception of Colfax County, New Mexico, all have a large proportion of land under Federal or tribal control. Movement of the MWEPA boundary in Arizona and New Mexico north to the state border with Utah and Colorado would add an area with 30,973 square miles (80,219 $km^2$) of potential suitable wolf habitat to be managed under the 10(j) experimental population rules. The areas in northern Arizona and New Mexico with potential suitable habitat that could support naturally dispersing and recolonizing wolves can be found within:

- The Santa Fe and Carson National Forests and areas adjacent to the forests including private land protected under conservation easement and tribal land managed as wilderness (New Mexico).
- Public lands within the Kaibab and Coconino plateaus and the Arizona Strip in northwest Arizona, including portions of Grand Canyon National Park, Kaibab National Forest, Coconino National Forest, Vermillion Cliffs National Monument, and Grand Canyon-Parashant National Monument (Arizona).
- The Chuska, Lukachukai, Carrizo, and Ceboletta mountain ranges, and other areas of montane woodlands and mountainous terrain in north-central Arizona and New Mexico (Arizona and New Mexico) (Carroll et al. 2006) (Figure 2-1)
- Tribal lands including the Navajo, Hualapai, Havasupai, and Kaibab Reservations in Arizona and the Jicarilla Apache and Taos Pueblo Indian Reservations in New Mexico.

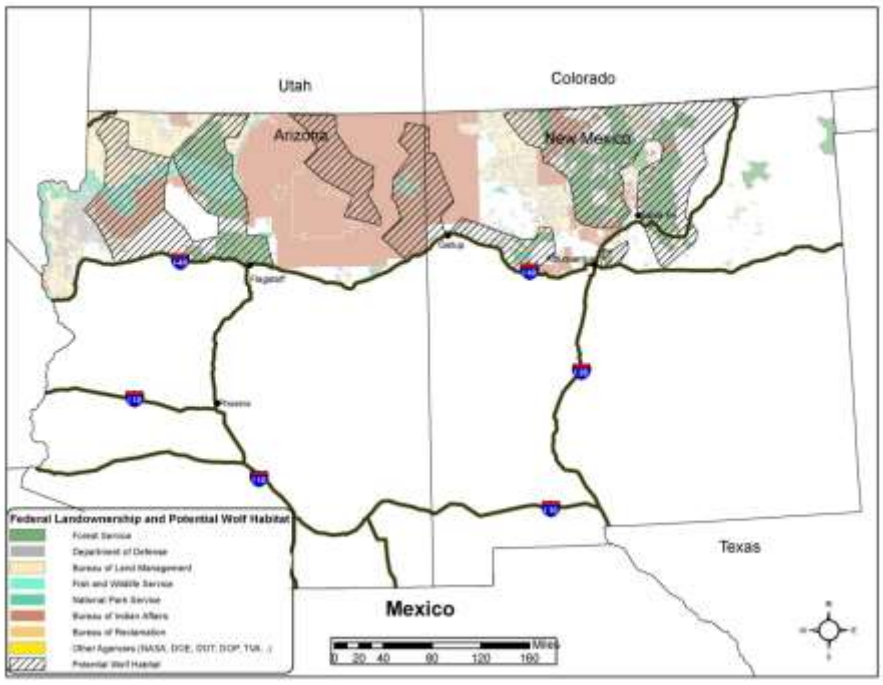


**Figure 2-1. Potential wolf habitat in Northern New Mexico and Arizona (north of Interstate 40)**

An expansion of the MWEPA north to the state boundaries coupled with the proposed management change to allow wolves to naturally disperse from the BRWRA into the surrounding MWEPA could eventually lead to the recolonization by Mexican wolves of these areas of suitable habitat in the northern portions of both Arizona and New Mexico. Our management of wolves in the expanded MWEPA would include conducting translocations on public lands and translocations and/or initial release of captive-raised wolves under agreements with tribal or private landowners. These management actions could serve as an adjunct to natural dispersal and contribute to the establishment of packs of Mexican wolves in the northern parts of both states. If established, we would expect these wolf packs in northern New Mexico and Arizona to be semi-disjunctive with linkage to the core population of wolves in the BRWRA through dispersal corridors and fragmented habitat.

The recovery and long-term conservation of the Mexican wolf in the southwestern U.S. and northern Mexico is likely to "depend on establishment of a metapopulation or several semi-disjunct but viable populations spanning a significant portion of its historic range in the region" (Carroll et al. 2006). As specified in our 1998 Final Rule the reintroduction of the Mexican wolf into the BRWRA was envisaged "as the first step toward recovery of the Mexican wolf in the wild" (63 FR 1752, January 12, 1998). In accordance with this vision our purpose in proposing changes to the 1998 Final Rule is to establish a viable, self-sustaining experimental population of Mexican wolves within the MWEPA which would eventually contribute to a broader recovery. The area north I-40 in Arizona and New Mexico contains extensive potential suitable habitat for wolves (Carroll et al. 2003). However, we do not believe that expansion of the MWEPA in Arizona and New Mexico north to the state borders with Utah and Colorado is necessary to achieve our objective to establish a viable, self-sustaining experimental population of Mexican wolves in the MWEPA.

In contrast, our proposal to extend the MWEPA south to the international border with Mexico would add an area managed under the 10(j) experimental population rules that we expect to improve the effectiveness of our management both for Mexican wolves which may disperse into the United States from Mexico and for wolves which may disperse from the core population of reintroduced Mexican wolves in the BRWRA. Establishment of Mexican wolves in the northern parts of Arizona and New Mexico may be important to achieve recovery goals. However, we do not believe the addition of the area north of I-40 to the MWEPA and the extension of the 10(j) management authority to this area is necessary to the achievement of our objective to establish a viable, self-sustaining experimental population of Mexican wolves in the MWEPA. For this reason we rejected this alternative because it is not necessary to meet the purpose and need for the Proposed Action.

### 2.2.2 Management Changes

- **Utilize White Sands Wolf Recovery Area (WSWRA) for initial releases.** The reintroduction of wolves into the WSWRA through initial release from captivity was considered as part of Alternative A (Preferred Alternative) in the 1996 Final Environmental Impact Statement (USFWS 1996) which was adopted for implementation in the 1997 Record of Decision. We designated the WSWRA as a wolf recovery area primarily because it lies within the probable historic range of the Mexican wolf, has a low density of human use and is largely free of livestock. Under the 1998 Final Rule, initial releases and reintroduction of wolves into the WSWRA is authorized, "if the Service finds it necessary and feasible" (63 FR 1752, January 12, 1998). Utilization of the WSWRA would seem to be necessary given the non-attainment of the 100 wolf minimum target population reintroduction project objective by the projected date of 2006. However, the question of its feasibility must also be considered. Mule deer, followed by the non-native oryx, pronghorn and feral horses are the most abundant ungulates within the WSWRA (USFWS 1996). A small population of desert bighorn sheep (*Ovis canadensis mexicana*) also lives within the San Andres NWR. While the WSWRA lies within the probable historic range of the Mexican wolf it is now considered an unsuitable area for wolf

release and reintroduction primarily due to the low density of ungulates. Wolf population numbers are directly related to ungulate biomass (Fuller 1989). Due to a low density of ungulate prey two independent assessments suggest that the WSWRA could only support 20 to 30 wolves (Bednarz 1988, Green-Hammond 1994). Deer populations have declined since these evaluations were conducted. We therefore consider this to be an overestimate of how many Mexican wolves this area could support in the present environment and have reevaluated the WSWRA as unlikely to be an area that can consistently support occupancy by wolves. The 3-Year Review concluded that a population of 20-30 wolves in the WSWRA "is not viable" (Shaffer 1987) and recommended that "the USFWS should not expend resources on reintroducing wolves to WSWRA (Paquet et al. 2001). The 5-Year Review also recommended that "any amended or new Mexican Wolf Nonessential Experimental Population Rule drafted….not include White Sands Missile Range as a Mexican Wolf Recovery Area or as a Reintroduction Zone" (AMOC and IFT 2005). We have never utilized the WSWRA for the release or translocation of wolves because of the low density of ungulates and we no longer consider the designation of the WSWRA as a recovery area necessary to achieve our reintroduction goal of establishing a viable, self-sustaining experimental population of Mexican wolves within the Mexican Wolf Experimental Population Area (MWEPA).

We have reevaluated the WSWRA as an area not suitable for wolf reintroduction and release. Our experience in the Reintroduction Project has shown that successful initial release sites have a relatively abundant prey base of elk or deer, limited or no livestock calving in the area, and clear separation from established wolf pack territories (IFT 2009). We define release success as a wolf that ultimately breeds and produces pups in the wild (IFT 2009). Although the WSWRA has a low density of human use and is largely free of livestock, the lack of an adequate prey base make the establishment of wolf territories and successful breeding problematic. Wolves released in area without adequate natural prey would require substantial and ongoing supplemental feedings and could eventually disperse to an area where the potential for depredation incidents or nuisance behavior is high. Therefore, this alternative would not minimize or mitigate the potential for wolf-depredation incidents or wolf-human interaction. For this reason we rejected this alternative because it did not satisfactorily meet the established selection criteria and therefore does not meet the purpose and need for the proposed action.

- **Allow only natural dispersal from the BRWRA into the MWEPA but no translocations within the MWEPA.** Alternatives One through Four propose to allow the natural dispersal of wolves from the BRWRA. We expect this proposed management change to lead to the establishment of wolf packs in the surrounding MWEPA. We are proposing this management change in order to better support natural wolf biology and behavior and therefore promote, rather than hinder, the growth of the experimental population of Mexican wolves. As they disperse from the BRWRA we expect wolves to establish territories in areas of suitable unoccupied (by wolves) habitat in the MWEPA. This process should expand the range of the experimental population of wolves and increase its numbers. Natural dispersal would therefore, in accordance with the purpose and need for the proposed action, assist us in reaching our population objective for a viable, self-sustaining experimental population of Mexican wolves within the MWEPA.

  Except as requested by tribal governments we do not intend to remove wolves unless they engage in depredation or nuisance behavior that cannot be effectively managed through non-removal techniques. However, we recognize that wolf management, including removals, in response to depredations and nuisance behavior is an essential component of reintroduction efforts (Boitani 2003). Under an alternative where we would allow natural dispersal and the establishment of wolf packs in the MWEPA but not allow translocations within the MWEPA, a management removal of a wolf would lead to either putting that wolf into captivity or returning it to the BRWRA. Placing a

wolf in captivity, in particular one that is genetically important to the population, can have a negative impact on our efforts to improve the genetic health (representation) of the reintroduced wild population of Mexican wolves. Similarly, returning a wolf to the BRWRA that was removed from the MWEPA can have a negative impact to our efforts to improve the resiliency of the wild Mexican wolf population and could lead to intraspecific conflicts within an area where pack territories are established. We expect natural growth fostered by dispersal and recolonization of areas of suitable habitat within the MWEPA, augmented by assisted growth from translocations, to contribute to our objective to establish a viable, self-sustaining experimental population of Mexican wolves. Therefore we view the ability to translocate wolves within the MWEPA, coupled with our proposal to allow them to naturally disperse, as a necessary management tool. This alternative neither provides increased management flexibility nor improves the effectiveness of the reintroduction project in implementing actions that would contribute to the establishment of a viable, self-sustaining experimental population of Mexican wolves. For these reasons we rejected this alternative because it did not satisfactorily meet the established selection criteria and therefore does not meet the purpose and need for the Proposed Action.

### 2.2.3 Implementation of a Management Plan

- **Implement a Mexican Wolf Management Plan for those portions of west Texas outside of the Mexican Wolf Experimental Population Area (MWEPA).** Should Mexican wolves disperse north into the United States from reestablished wolf populations in Mexico, we consider it important to have a management plan in place that provides uniform interagency management guidelines in the states which are likely to receive them. The implementation of a wolf management plan for Arizona, New Mexico and west Texas was the subject of the Proposed Action in our *Preliminary Draft Environmental Assessment for the Implementation of a Southwestern Gray Wolf (Canis lupus) Management Plan for Portions of Arizona, New Mexico and Texas*. We decided to withdraw the proposed action for this PDEA in response to early feedback during the agency/local government/tribal scoping review.

  In our reevaluation of the need for the action we decided that because of the distance (approximately 130 miles/209 km) to the Texas border from the planned Nuevo Leon reintroduction site in Mexico, and the difficulties encountered in the initial release of Mexican wolves into the Sierra San Luis in the state of Sonora, dispersal and recolonization of west Texas by Mexican wolves is considered unlikely in the foreseeable future. Under Alternatives Three and Four we propose to extend the MWEPA in Arizona and New Mexico south to the international border with Mexico. All Mexican wolves, regardless of origin within the expanded MWEPA would be managed under guidelines established for the 10(j) nonessential experimental population. In Alternatives One through Four we also propose to modify the boundaries of the MWEPA to eliminate the portion of west Texas lying north of US Highway 62/180 to the Texas-New Mexico boundary. Expansion of the MWEPA south to the international border with Mexico would provide uniform interagency management guidelines under section 10(j) of the Act in the portions of the two states, Arizona and New Mexico, which are most likely to receive dispersing or recolonizing wolves from reestablished Mexican wolf populations in Mexico. Because of the limited size and extent of potential suitable habitat in the Texas portion of the existing MWEPA and because of the low probability of Mexican wolves dispersing into Texas from the core population of Mexican wolves in the MWEPA, we are proposing to modify the MWEPA to no longer include any portion of Texas. Similarly, because of the low probability of Mexican wolves dispersing into Texas from reestablished Mexican wolf populations in Mexico we no longer consider it necessary to implement a wolf management plan for portions of west Texas where Mexican wolves will be listed as endangered. In the event that a Mexican wolf is found in Texas it

would either be managed as endangered under the ESA or, if it originated from the experimental population of Mexican wolves, it would be captured and returned to the MWEPA or placed in captivity.

With the modification to remove the small portion of Texas from the MWEPA and because of the low probability of Mexican wolf dispersal into Texas from Mexico we do not believe implementation of a Mexican Wolf Management Plan for west Texas would better facilitate the interagency cooperation necessary to successfully manage and enhance Mexican wolf recovery. For this reason we rejected this alternative because it did not satisfactorily meet the established selection criteria and therefore does not meet the purpose and need for the Proposed Action.

- **Implement the Management Plan for the Mexican wolf but without Federal funding.** This alternative would implement a Mexican Wolf Management Plan for the states of Arizona and New Mexico but without the provision of Federal funding to state, tribal and Federal agency partners to assist in the execution of management activities. The Federal, state, and tribal land management agencies and the state wildlife agencies are key partners for the successful recovery and the management of the Mexican wolf in these two states. Without the provision of Federal funding these agencies will be limited in their ability to respond to depredation incidents and reports of nuisance behavior and would be unable to fully participate in the necessary management activities that minimize or mitigate wolf-human and wolf-livestock interaction while maximizing the potential for successful establishment of new wolf packs in suitable areas of New Mexico and Arizona outside of the MWEPA. Unfunded management actions would not facilitate the interagency cooperation necessary to successfully manage and enhance Mexican wolf recovery in Arizona and New Mexico and could lead to an erosion of public support for Mexican wolf recovery. For these reasons we rejected this alternative because it did not satisfactorily meet the established selection criteria and therefore does not meet the purpose and need for the Proposed Action.

## 2.3 PROPOSED ACTION AND ALTERNATIVES CONSIDERED

We have developed a range of alternatives, including the Proposed Action and No Action alternative, for our proposal to: (1) modify the geographic boundaries established for the Mexican wolf reintroduction in the 1998 Final Rule; (2) modify the management regulations established in the 1998 Final Rule which govern the release, translocation, natural dispersal, and take (see the definition of "take" provided in the List of Definitions) of Mexican wolves, and; (3) implement a management plan for Mexican wolves for those areas of Arizona and New Mexico that are outside of the Mexican Wolf Experimental Population Area (MWEPA). These actions would be implemented through a Final Nonessential Experimental Rule (see Appendix B for the proposed rule), an Endangered Species Act (ESA) Section 10 (a)(1)(a) research and recovery permit, and/or provisions for federal funding.

In summary we propose to:

- Make geographic boundary changes that:
  - Remove the designation of the White Sands Wolf Recovery Area (WSWRA).
  - Modify the geographic boundaries of the MWEPA.
  - Eliminate the designation of the Primary Recovery Zone (PRZ) and Secondary Recovery Zone (SRZ) within the Blue Range Wolf Recovery Area (BRWRA).
- Make management changes that:

- Provide for the initial release of captive-raised Mexican wolves throughout the BRWRA.
- Allow the natural dispersal of Mexican wolves from the BRWRA into the MWEPA.
- Provide for the translocation of Mexican wolves within the MWEPA pursuant to an authorized management purpose.
- Modify the provisions for the take of Mexican wolves on private or tribal land anywhere within the modified MWEPA.

- Develop and implement management actions on private land within the MWEPA by the Service or an authorized agency to benefit Mexican wolf recovery in voluntary cooperation with private landowners
- Develop and implement management actions on tribal land within the MWEPA by the Service or an authorized agency in voluntary cooperation with tribal governments.
- Implement a Management Plan *(Mexican Wolf Management Plan)* for the Mexican wolf for those portions of Arizona and New Mexico not included as part of the MWEPA.

Using the criteria listed in Section 2.1 the alternatives we brought forward for further consideration are intended to meet our purpose and need by:

- Establishing a larger experimental population of Mexican wolves distributed over a larger area.
- Improving the genetic health of the experimental population.
- Providing the interagency management guidelines for those areas of Arizona and New Mexico outside of the MWEPA necessary to effectively manage Mexican wolves in a manner that conserves and promotes their survival while being responsive to reports of depredation incidents and nuisance behavior.

Five alternatives, including the Proposed Action and No Action Alternatives, are considered by us in this Environmental Impact Statement (EIS):

### 2.3.1 Alternative One (Proposed Action):

- **Make geographic boundary changes that: Remove the designation of the White Sands Wolf Recovery Area (WSWRA) as an area for the reintroduction of Mexican wolves; remove the small portion of Texas lying north of U.S. Highway 62/80 to the Texas-New Mexico boundary from the Mexican Wolf Experimental Population Area (MWEPA); eliminate the designation of the Primary Recovery Zone (PRZ) and Secondary Recovery Zone (SRZ) within the Blue Range Wolf Recovery Area (BRWRA) (Figure 2-2).**
- **Make management changes that: Allow initial release of Mexican wolves from captivity to the wild throughout the entire BRWRA; allow Mexican wolves to disperse naturally from the BRWRA into the MWEPA and occupy the MWEPA; provide for the management of Mexican wolves in the MWEPA by reducing conflicts with humans and land uses through such means as hazing, trapping, translocations, and removals; modify the provisions for the take of Mexican wolves on private or tribal land within the modified MWEPA.**
- **Develop and implement management actions on private land within the modified MWEPA by the Service or an authorized agency to benefit Mexican wolf recovery in**

**voluntary cooperation with private landowners, including but not limited to initial release and translocation of wolves if requested by the landowner.**

- **Develop and implement management actions on tribal land within the modified MWEPA by the Service or an authorized agency in voluntary cooperation with tribal governments including but not limited to initial release, translocation, capture, and removal of Mexican wolves if requested by the tribal government.**
- **Implement a management plan *(Mexican Wolf Management Plan)* for the Mexican wolf for those portions of Arizona and New Mexico that are outside of the modified MWEPA.**

Alternative One, which is also the Proposed Action, would include all the modifications included in our Proposed Rule (Appendix B). Under Alternative One we do not propose to expand the boundaries of either the BRWRA or the MWEPA. However, under this alternative we would make management changes that provide for the initial release of captive-raised wolves throughout the BRWRA and we would allow the natural dispersal of wolves from the BRWRA into the MWEPA. Alternative One would:

- Remove the designation of the WSWRA as an area for the reintroduction of Mexican wolves.
- Remove the small portion of Texas lying north of U.S. Highway 62/180 to the Texas-New Mexico boundary from the MWEPA.
- Make management changes so that:
  - Mexican wolves could be released from captivity to the wild throughout the entire BRWRA. Initial releases of captive-raised Mexican wolves could be conducted throughout the BRWRA. Of the 32 approved initial release and translocation sites in Arizona and New Mexico, 17 sites are within the PRZ and the remaining 15 are in the SRZ of the BRWRA. We propose in this alternative to utilize all 15 of these sites in the SRZ (currently used only for translocation of wolves with previous wild experience), for the initial release of captive-raised Mexican wolves. Ten of these sites are within the Gila National Forest in New Mexico (Figure 2-3) and five sites are within the Apache National Forest in Arizona (Figure 2-4). This alternative would also utilize for initial release any additional sites within the whole of the BRWRA should they, in the future, be proposed for use by the Interagency Field Team for management purposes (e.g., to compensate for a wolf mortality, or to enhance genetics among the reintroduced wild wolf population). This management change would eliminate the need to define the Primary and secondary recovery zone within the BRWRA. Therefore, we would discontinue the use of these zones and their definitions in this alternative.
  - Mexican wolves would be allowed to disperse naturally from the BRWRA into the MWEPA and occupy the MWEPA. We would not remove wolves on public or private land in the MWEPA except in the case of depredation or other nuisance behavior that cannot be effectively managed through non-removal techniques. We would capture and remove wolves on tribal land if requested by the tribal government.
  - Wolves captured in the MWEPA pursuant to an authorized management purpose could be translocated (re-released) at approved translocation sites on public land within the MWEPA (inclusive of the BRWRA) with the option to translocate or release wolves directly from captivity on tribal or private land when requested by the tribal government or landowner.

- Provisions for take (see the definition of "take" provided in the List of Definitions) of a Mexican wolf (see Appendix B. Proposed Rule) are modified to:
  - Identify section 6 of the Act as authorizing language for take pursuant to 50 CFR 17.31 for state wildlife agencies with authority to manage Mexican wolves under the nonessential experimental population rule.
  - Clarify that an individual can be authorized to take Mexican wolves under specific circumstances.
  - Clarify allowable take for Federal agencies and authorized personnel.
  - Revise the conditions that determine when we would issue a permit to livestock owners or their agents to allow take of Mexican wolves that are engaged in the act of killing, wounding or biting livestock on public lands allotted for grazing from ''6 breeding pairs'' to ''100 Mexican wolves'' to be consistent with our population objective of establishing a population of at least 100 wolves.
  - Revise the prohibitions for take such that taking a Mexican wolf with a trap, snare, or other type of capture device within occupied Mexican wolf range is prohibited and will not be considered unavoidable or unintentional take, unless due care was exercised to avoid injury or death to a Mexican wolf.

- Develop and implement management actions on tribal land within the modified MWEPA by the Service or an authorized agency in voluntary cooperation with tribal governments including but not limited to initial release, translocation, capture, and removal of Mexican wolves if requested by the tribal government. We would seek to continue the cooperative agreement entered into in 2000 with the White Mountain Apache Tribe to allow wolves to occupy the Fort Apache Indian Reservation and we would seek to enter into cooperative agreements for the management of wolves with other tribes within the modified MWEPA. These cooperative agreements would be subject to successive renewal, in which the Tribe has the option of allowing or prohibiting wolf re-establishment, whether through natural dispersion, initial release from captivity, or translocation, on recognized tribal lands or reservations.

- Develop and implement management actions on private land within the modified MWEPA by the Service or an authorized agency to benefit Mexican wolf recovery in voluntary cooperation with private landowners, including but not limited to initial release and translocation of wolves if requested by the landowner. Wolves present on private lands within the modified MWEPA would not be subject to management removal except in the case of depredation incidents or other nuisance behavior that cannot be effectively managed through non-removal techniques.

- Implement a management plan *(Mexican Wolf Management Plan)* for the Mexican wolf for those portions of Arizona and New Mexico that are outside of the modified MWEPA. Under this alternative the proposed management plan would be implemented for those areas of Arizona and New Mexico north of Interstate 40 and south of Interstate 10.

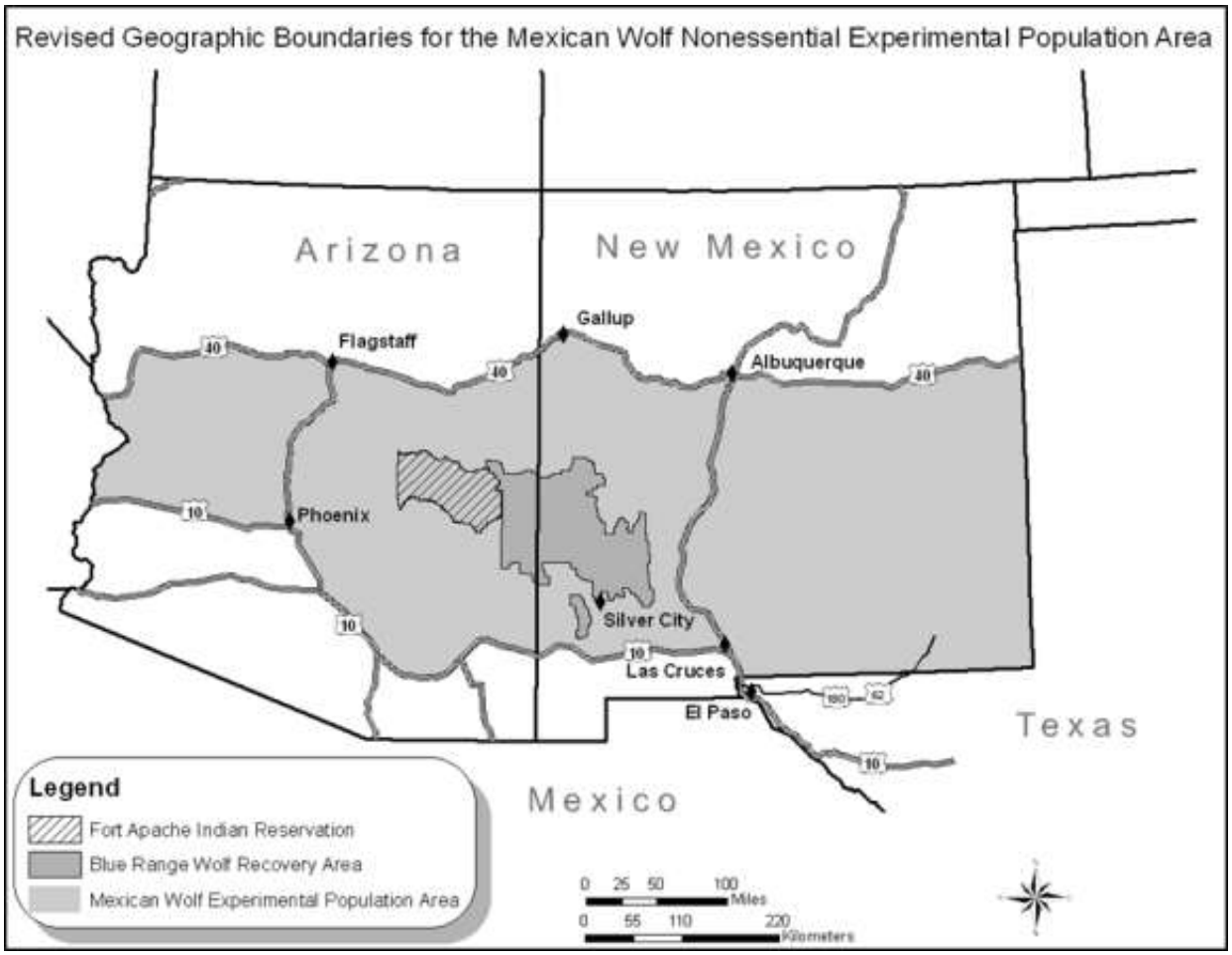


**Figure 2-2. Alternative One (Proposed Action) showing the proposed revision to the geographic boundaries for the Mexican Wolf Experimental Population Area (MWEPA) that: (1) remove the small portion of Texas lying north of U.S. Highway 62/80 to the Texas-New Mexico boundary from the MWEPA; (2) eliminate the designation of the Primary Recovery Zone and Secondary Recovery Zone within the Blue Range Wolf Recovery Area; and (3) remove the designation of the White Sands Wolf Recovery Area as an area for the reintroduction of Mexican wolves.**

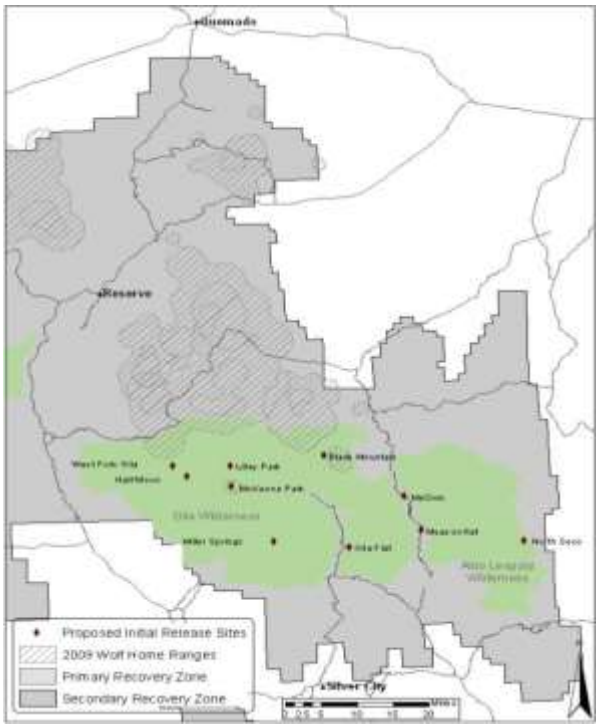


**Figure 2-3. Proposed Initial Release Sites (Using existing Translocation sites) in the Secondary Recovery Zone, Gila National Forest, New Mexico.**

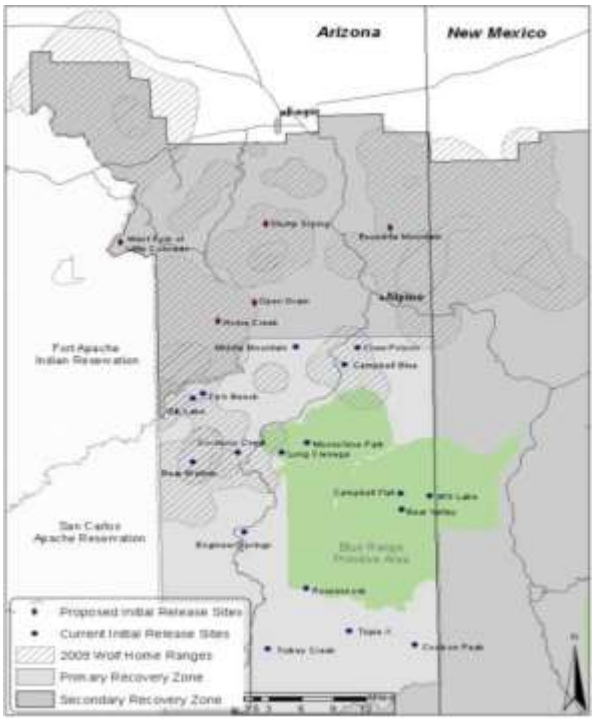


**Figure 2-4. Proposed Initial Release Sites (Using existing Translocation and Initial Release sites) in the Primary and Secondary Recovery Zone, Apache National Forest, Arizona.**

### 2.3.2 Alternative Two (Blue Range Wolf Recovery Area (BRWRA) Expansion)

- **Make geographic boundary changes that: Remove the designation of the White Sands Wolf Recovery Area (WSWRA); remove the small portion of Texas lying north of U.S. Highway 62/80 to the Texas-New Mexico boundary from the Mexican Wolf Experimental Population Area (MWEPA); expand the geographic boundaries of the BRWRA by including any or all of the Sitgreaves National Forest and the Payson, Pleasant Valley, and Tonto Basin Ranger Districts of the Tonto National Forests in Arizona and the Magdalena Ranger District of the Cibola National Forest in New Mexico; eliminate the designation of the Primary Recovery Zone (PRZ) and Secondary Recovery Zone (SRZ) within the BRWRA (Figure 2-5).**
- **Make management changes that: Allow initial release of Mexican wolves from captivity to the wild throughout the entire BRWRA; allow Mexican wolves to disperse naturally from the BRWRA into the MWEPA and occupy the MWEPA; provide for the management of Mexican wolves in the MWEPA by reducing conflicts with humans and land uses through such means as hazing, trapping, translocations, and removals; modify the provisions for the take of Mexican wolves on private or tribal land within the modified MWEPA.**
- **Develop and implement management actions on private land within the modified MWEPA by the Service or an authorized agency to benefit Mexican wolf recovery in voluntary cooperation with private landowners, including but not limited to initial release and translocation of wolves if requested by the landowner.**
- **Develop and implement management actions on tribal land within the modified MWEPA by the Service or an authorized agency in voluntary cooperation with tribal governments including but not limited to initial release, translocation, capture, and removal of Mexican wolves if requested by the tribal government.**
- **Implement a management plan *(Mexican Wolf Management Plan)* for the Mexican wolf for those portions of Arizona and New Mexico that are outside of the modified MWEPA.**

Alternative Two would include all the initiatives proposed under Alternative One; however, under this alternative we would also expand the geographic boundaries of the BRWRA to include any or all of the Sitgreaves National Forest and the Payson, Pleasant Valley, and Tonto Basin Ranger Districts of the Tonto National Forests in Arizona and the Magdalena Ranger District of the Cibola National Forest in New Mexico. Alternative Two would:

- Remove the designation of the WSWRA as an area for the reintroduction of Mexican wolves.
- Remove the small portion of Texas lying north of U.S. Highway 62/180 to the Texas-New Mexico boundary from the MWEPA.
- Expand the boundaries of the BRWRA to include any or all of the Sitgreaves National Forest and the Payson, Pleasant Valley, and Tonto Basin Ranger Districts of the Tonto National Forests in Arizona and the Magdalena Ranger District of the Cibola National Forest in New Mexico. As part of this expansion we would eliminate the designation of the Primary and Secondary Recovery Zone within the BRWRA.
- Make management changes so that:

- Mexican wolves could be released from captivity to the wild throughout the entire BRWRA. Initial releases of captive-raised Mexican wolves could be conducted throughout the expanded BRWRA. We propose in this alternative to utilize for the initial release of captive-raised wolves and for the translocation of wolves all of the 32 currently approved initial release and translocation sites within the Apache and Gila National Forests in Arizona and New Mexico. In addition we propose to select initial release and translocation sites throughout the expanded BRWRA. Specifically, new sites in the Sitgreaves National Forest and the Payson, Pleasant Valley, and Tonto Basin Ranger Districts of the Tonto National Forests in Arizona and the Magdalena Ranger District of the Cibola National Forest in New Mexico. This alternative would also utilize for initial release and translocation any additional sites within the expanded BRWRA should they, in the future, be proposed for use by the Interagency Field Team for management purposes (e.g., to compensate for a wolf mortality, or to enhance genetics among the reintroduced wild wolf population).
- Mexican wolves would be allowed to disperse naturally from the BRWRA into the MWEPA and occupy the MWEPA. We would not remove wolves on public or private land in the MWEPA except in the case of depredation or other nuisance behavior that cannot be effectively managed through non-removal techniques. We would capture and remove wolves on tribal land if requested by the tribal government.
- Wolves captured in the MWEPA pursuant to an authorized management purpose could be translocated (re-released) at approved translocation sites on public land within the MWEPA (inclusive of the BRWRA) with the option to translocate or release wolves directly from captivity on tribal or private land when requested by the tribal government or landowner.
- Provisions for take (see the definition of "take" provided in the List of Definitions) of a Mexican wolf (see Appendix B. Proposed Rule) are modified to:
  - Identify section 6 of the Act as authorizing language for take pursuant to 50 CFR 17.31 for state wildlife agencies with authority to manage Mexican wolves under the nonessential experimental population rule.
  - Clarify that an individual can be authorized to take Mexican wolves under specific circumstances.
  - Clarify allowable take for Federal agencies and authorized personnel.
  - Revise the conditions that determine when we would issue a permit to livestock owners or their agents to allow take of Mexican wolves that are engaged in the act of killing, wounding or biting livestock on public lands allotted for grazing from ''6 breeding pairs'' to ''100 Mexican wolves'' to be consistent with our population objective of establishing a population of at least 100 wolves.
  - Revise the prohibitions for take such that taking a Mexican wolf with a trap, snare, or other type of capture device within occupied Mexican wolf range is prohibited and will not be considered unavoidable or unintentional take, unless due care was exercised to avoid injury or death to a Mexican wolf.

- Develop and implement management actions on tribal land within the modified MWEPA by the Service or an authorized agency in voluntary cooperation with tribal governments including but not limited to initial release, translocation, capture, and removal of Mexican wolves if requested by the

tribal government. We would seek to continue the cooperative agreement entered into in 2000 with the White Mountain Apache Tribe to allow wolves to occupy the Fort Apache Indian Reservation and we would seek to enter into cooperative agreements for the management of wolves with other tribes within the modified MWEPA. These cooperative agreements would be subject to successive renewal, in which the Tribe has the option of allowing or prohibiting wolf re-establishment, whether through natural dispersion, initial release from captivity, or translocation, on recognized tribal lands or reservations.

- Develop and implement management actions on private land within the modified MWEPA by the Service or an authorized agency to benefit Mexican wolf recovery in voluntary cooperation with private landowners, including but not limited to initial release and translocation of wolves if requested by the landowner. Wolves present on private lands within the modified MWEPA would not be subject to management removal except in the case of depredation incidents or other nuisance behavior that cannot be effectively managed through non-removal techniques.
- Implement a management plan *(Mexican Wolf Management Plan)* for the Mexican wolf for those portions of Arizona and New Mexico not included in the modified MWEPA. Under this alternative the proposed management plan would be implemented for those areas of Arizona and New Mexico north of Interstate 40 and south of Interstate 10.

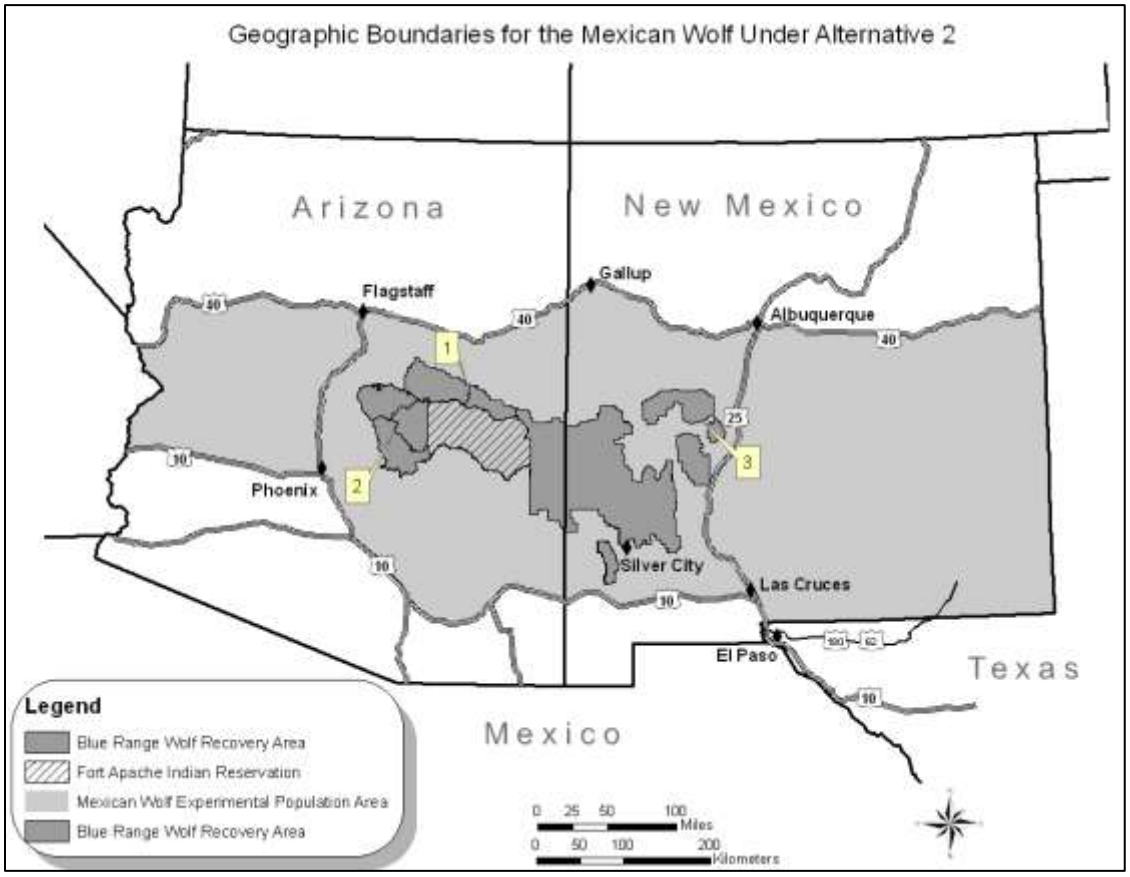


**Figure 2-5. Alternative Two (Blue Range Wolf Recovery Area (BRWRA) Expansion) showing the proposed revision to the geographic boundaries for the Mexican Wolf Experimental Population Area (MWEPA) that: (1) remove the small portion of Texas lying north of U.S. Highway 62/80 to the Texas-New Mexico boundary from the MWEPA; (2) expand the BRWRA to include any or all of the ranger districts of the Sitgreaves National Forest (labeled as 1 in the map), three ranger districts within the Tonto National Forest (labeled as 2 in the map), one ranger district within the Cibola National Forest (labeled as 3 in the map); (3) eliminate the designation of the Primary Recovery Zone and Secondary Recovery Zone within the BRWRA; and (4) remove the designation of the White Sands Wolf Recovery Area as an area for the reintroduction of Mexican wolves.**

### 2.3.3 Alternative Three (Mexican Wolf Experimental Population Area (MWEPA) Expansion):

- **Make geographic boundary changes that: Remove the designation of the White Sands Wolf Recovery Area (WSWRA) as an area for the reintroduction of Mexican wolves; remove the small portion of Texas lying north of U.S. Highway 62/80 to the Texas-New Mexico boundary from the MWEPA; move the southern boundary of the MWEPA in Arizona and New Mexico form Interstate-10 to the United States-Mexico international border; eliminate the designation of the Primary Recovery Zone (PRZ) and Secondary Recovery Zone (SRZ) within the Blue Range Wolf Recovery Area (BRWRA) (Figure 2-6).**

- **Make management changes that: Allow initial release of Mexican wolves from captivity to the wild throughout the entire BRWRA; allow Mexican wolves to disperse naturally**

**from the BRWRA into the MWEPA and occupy the MWEPA; provide for the management of Mexican wolves in the MWEPA by reducing conflicts with humans and land uses through such means as hazing, trapping, translocations, and removals; modify the provisions for the take of Mexican wolves on private or tribal land within the modified MWEPA.**

- **Develop and implement management actions on private land within the modified MWEPA by the Service or an authorized agency to benefit Mexican wolf recovery in voluntary cooperation with private landowners, including but not limited to initial release and translocation of wolves if requested by the landowner.**
- **Develop and implement management actions on tribal land within the modified MWEPA by the Service or an authorized agency in voluntary cooperation with tribal governments including but not limited to initial release, translocation, capture, and removal of Mexican wolves if requested by the tribal government.**
- **Implement a management plan *(Mexican Wolf Management Plan)* for the Mexican wolf for those portions of Arizona and New Mexico not included as part of the modified MWEPA.**

Alternative Three would include all the initiatives proposed under Alternative One; however, under this alternative we would also extend the southern boundary of the MWEPA in Arizona and New Mexico from Interstate Highway 10 (I-10) to the United States-Mexico international border. Alternative Three would:

- Remove the designation of the WSWRA as an area for the reintroduction of Mexican wolves.
- Remove the small portion of Texas lying north of U.S. Highway 62/180 to the Texas-New Mexico boundary from the MWEPA.
- Move the southern boundary of the MWEPA in Arizona and New Mexico from Interstate 10 to the United States-Mexico international border.
- Make management changes so that:
  - Mexican wolves could be released from captivity to the wild throughout the entire BRWRA. Initial releases of captive-raised Mexican wolves could be conducted throughout the BRWRA. Of the 32 approved initial release and translocation sites in Arizona and New Mexico, 17 sites are within the PRZ and the remaining 15 are in the SRZ of the BRWRA. We propose in this alternative to utilize all 15 of these sites in the SRZ (currently used only for translocation of wolves with previous wild experience), for the initial release of captive-raised Mexican wolves. Ten of these sites are within the Gila National Forest in New Mexico (Figure 2-3) and five sites are within the Apache National Forest in Arizona (Figure 2-4). This alternative would also utilize for initial release any additional sites within the whole of the BRWRA should they, in the future, be proposed for use by the Interagency Field Team for management purposes (e.g., to compensate for a wolf mortality, or to enhance genetics among the reintroduced wild wolf population). This management change would eliminate the need to define the Primary and secondary recovery zone within the BRWRA. Therefore, we would discontinue the use of these zones and their definitions in this alternative.
  - Mexican wolves would be allowed to disperse naturally from the BRWRA into the MWEPA and occupy the MWEPA. We would not remove wolves on public or private land in the

MWEPA except in the case of depredation or other nuisance behavior that cannot be effectively managed through non-removal techniques. We would capture and remove wolves on tribal land if requested by the tribal government.

- Wolves captured in the MWEPA pursuant to an authorized management purpose could be translocated (re-released) at approved translocation sites on public land within the MWEPA (inclusive of the BRWRA) with the option to translocate or release wolves directly from captivity on tribal or private land when requested by the tribal government or landowner.

- Provisions for take (see the definition of "take" provided in the List of Definitions) of a Mexican wolf (see Appendix B. Proposed Rule) are modified to:
  - Identify section 6 of the Act as authorizing language for take pursuant to 50 CFR 17.31 for state wildlife agencies with authority to manage Mexican wolves under the nonessential experimental population rule.
  - Clarify that an individual can be authorized to take Mexican wolves under specific circumstances.
  - Clarify allowable take for Federal agencies and authorized personnel.
  - Revise the conditions that determine when we would issue a permit to livestock owners or their agents to allow take of Mexican wolves that are engaged in the act of killing, wounding or biting livestock on public lands allotted for grazing from ''6 breeding pairs'' to ''100 Mexican wolves'' to be consistent with our population objective of establishing a population of at least 100 wolves.
  - Revise the prohibitions for take such that taking a Mexican wolf with a trap, snare, or other type of capture device within occupied Mexican wolf range is prohibited and will not be considered unavoidable or unintentional take, unless due care was exercised to avoid injury or death to a Mexican wolf.

- Develop and implement management actions on tribal land within the modified MWEPA by the Service or an authorized agency in voluntary cooperation with tribal governments including but not limited to initial release, translocation, capture, and removal of Mexican wolves if requested by the tribal government. We would seek to continue the cooperative agreement entered into in 2000 with the White Mountain Apache Tribe to allow wolves to occupy the Fort Apache Indian Reservation and we would seek to enter into cooperative agreements for the management of wolves with other tribes within the modified MWEPA. These cooperative agreements would be subject to successive renewal, in which the Tribe has the option of allowing or prohibiting wolf re-establishment, whether through natural dispersion, initial release from captivity, or translocation, on recognized tribal lands or reservations.

- Develop and implement management actions on private land within the modified MWEPA by the Service or an authorized agency to benefit Mexican wolf recovery in voluntary cooperation with private landowners, including but not limited to initial release and translocation of wolves if requested by the landowner. Wolves present on private lands within the modified MWEPA would not be subject to management removal except in the case of depredation incidents or other nuisance behavior that cannot be effectively managed through non-removal techniques.

- Implement a management plan *(Mexican Wolf Management Plan)* for the Mexican wolf for those portions of Arizona and New Mexico that are outside of the modified MWEPA. Under this alternative the proposed management plan would be implemented for those areas of Arizona and New Mexico north of Interstate 40 and south of Interstate 10.

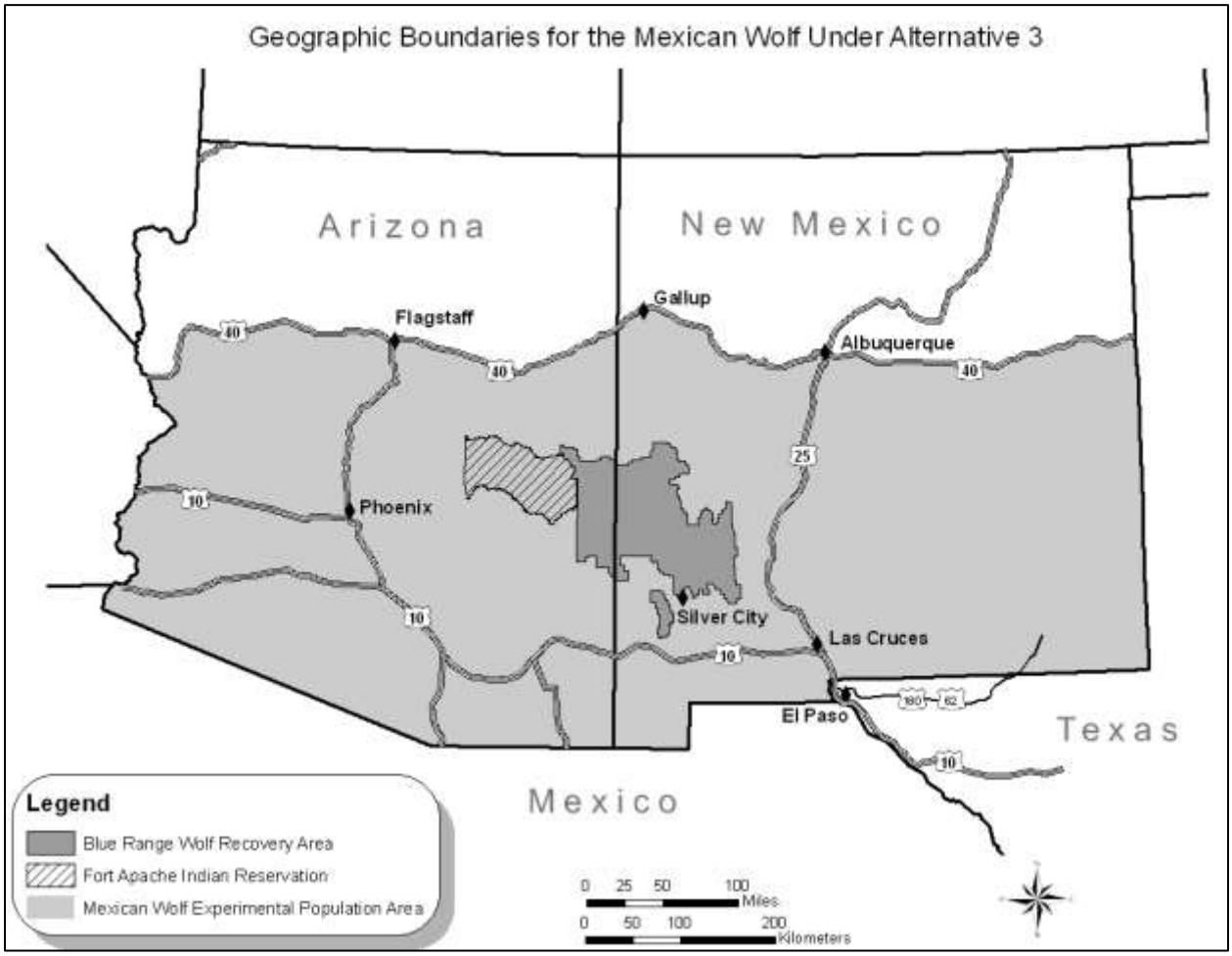


**Figure 2-6. Alternative Three (Mexican Wolf Experimental Population Area (MWEPA) Expansion) showing the proposed revision to the geographic boundaries for the MWEPA that: (1) remove the small portion of Texas lying north of U.S. Highway 62/80 to the Texas-New Mexico boundary from the MWEPA; (2) move the southern boundary of the MWEPA in Arizona and New Mexico from Interstate-10 to the United States-Mexico international border; (3) eliminate the designation of the Primary Recovery Zone and Secondary Recovery Zone within the Blue Range Wolf Recovery Area; and (4) remove the designation of the White Sands Wolf Recovery Area as an area for the reintroduction of Mexican wolves.**

### 2.3.4 Alternative Four (Comprehensive Alternative):

- **Make geographic boundary changes that: Remove the designation of the White Sands Wolf Recovery Area (WSWRA) as an area for the reintroduction of Mexican wolves; remove the small portion of Texas lying north of U.S. Highway 62/80 to the Texas-New Mexico boundary from the Mexican Wolf Experimental Population Area (MWEPA);**

**move the southern boundary of the MWEPA in Arizona and New Mexico form Interstate-10 to the United States-Mexico international border; expand the geographic boundaries of the Blue Range Wolf Recovery Area (BRWRA) by including any or all of the Sitgreaves National Forest and the Payson, Pleasant Valley, and Tonto Basin Ranger Districts of the Tonto National Forests in Arizona and the Magdalena Ranger District of the Cibola National Forest in New Mexico; eliminate the designation of the Primary Recovery Zone (PRZ) and Secondary Recovery Zone (SRZ) within the BRWRA (Figure 2-7).**

- **Make management changes that: Allow initial release of Mexican wolves from captivity to the wild throughout the entire BRWRA; allow Mexican wolves to disperse naturally from the BRWRA into the MWEPA and occupy the MWEPA; provide for the management of Mexican wolves in the MWEPA by reducing conflicts with humans and land uses through such means as hazing, trapping, translocations, and removals; modify the provisions for the take of Mexican wolves on private or tribal land within the modified MWEPA.**
- **Develop and implement management actions on private land within the modified MWEPA by the Service or an authorized agency to benefit Mexican wolf recovery in voluntary cooperation with private landowners, including but not limited to initial release and translocation of wolves if requested by the landowner.**
- **Develop and implement management actions on tribal land within the modified MWEPA by the Service or an authorized agency in voluntary cooperation with tribal governments including but not limited to initial release, translocation, capture, and removal of Mexican wolves if requested by the tribal government.**
- **Implement a management plan *(Mexican Wolf Management Plan)* for the Mexican wolf for those portions of Arizona and New Mexico not included as part of the modified MWEPA.**

Alternative Four would include all the initiatives proposed under Alternative One as well as the geographic boundary expansions proposed under Alternatives Two and Three. Under this alternative we would expand the geographic boundaries of the BRWRA and we would extend the southern boundary of the MWEPA in Arizona and New Mexico. Under this alternative we would also include additional management changes that would provide for the take of any Mexican wolf engaged in the act of killing, wounding, or biting pets and we would include provisions for the conditional issuance of permits on private and tribal land anywhere within the modified and expanded MWEPA. Alternative Four would:

- Remove the designation of the WSWRA as an area for the reintroduction of Mexican wolves.
- Remove the small portion of Texas lying north of U.S. Highway 62/180 to the Texas-New Mexico boundary from the MWEPA.
- Move the southern boundary of the MWEPA in Arizona and New Mexico from Interstate 10 to the United States-Mexico international border.
- Expand the boundaries of the BRWRA to include any or all of the Sitgreaves National Forest and the Payson, Pleasant Valley, and Tonto Basin Ranger Districts of the Tonto National Forests in Arizona and the Magdalena Ranger District of the Cibola National Forest in New Mexico. As part of this expansion we would eliminate the designation of the Primary and Secondary Recovery Zone within the BRWRA.

- Make management changes so that:

  - Mexican wolves could be released from captivity to the wild throughout the entire BRWRA. Initial releases of captive-raised Mexican wolves could be conducted throughout the expanded BRWRA. We propose in this alternative to utilize for the initial release of captive-raised wolves and for the translocation of wolves all of the 32 currently approved initial release and translocation sites within the Apache and Gila National Forests in Arizona and New Mexico. In addition we propose to select initial release and translocation sites throughout the expanded BRWRA. Specifically, new sites in the Sitgreaves National Forest and the Payson, Pleasant Valley, and Tonto Basin Ranger Districts of the Tonto National Forests in Arizona and the Magdalena Ranger District of the Cibola National Forest in New Mexico. This alternative would also utilize for initial release and translocation any additional sites within the expanded BRWRA should they, in the future, be proposed for use by the Interagency Field Team for management purposes (e.g., to compensate for a wolf mortality, or to enhance genetics among the reintroduced wild wolf population).
  - Mexican wolves would be allowed to disperse naturally from the BRWRA into the MWEPA and occupy the MWEPA. We would not remove wolves on public or private land in the MWEPA except in the case of depredation or other nuisance behavior that cannot be effectively managed through non-removal techniques. We would capture and remove wolves on tribal land if requested by the tribal government.
  - Wolves captured in the MWEPA pursuant to an authorized management purpose could be translocated (re-released) at approved translocation sites on public land within the MWEPA (inclusive of the BRWRA) with the option to translocate or release wolves directly from captivity on tribal or private land when requested by the tribal government or landowner.
  - Provisions for take (see the definition of "take" provided in the List of Definitions) of a Mexican wolf (see Appendix B. Proposed Rule) are modified to:
    - Identify section 6 of the Act as authorizing language for take pursuant to 50 CFR 17.31 for state wildlife agencies with authority to manage Mexican wolves under the nonessential experimental population rule.
    - Clarify that an individual can be authorized to take Mexican wolves under specific circumstances.
    - Clarify allowable take for Federal agencies and authorized personnel.
    - Revise the conditions that determine when we would issue a permit to livestock owners or their agents to allow take of Mexican wolves that are engaged in the act of killing, wounding or biting livestock on public lands allotted for grazing from ''6 breeding pairs'' to ''100 Mexican wolves'' to be consistent with our population objective of establishing a population of at least 100 wolves.
    - Revise the prohibitions for take such that taking a Mexican wolf with a trap, snare, or other type of capture device within occupied Mexican wolf range is prohibited and will not be considered unavoidable or unintentional take, unless due care was exercised to avoid injury or death to a Mexican wolf.
    - Include provisions for take by pet owners of any Mexican wolf engaged in the act of killing, wounding, or biting pets on private or tribal land anywhere within the

modified and expanded MWEPA, provided that evidence of a freshly wounded or killed pet by wolves is present.

- Include provisions for the issuance of permits on private or tribal land anywhere within the modified and expanded MWEPA to allow livestock owners or their agents to take any wolf that is present on private or tribal.

- Develop and implement management actions on tribal land within the modified MWEPA by the Service or an authorized agency in voluntary cooperation with tribal governments including but not limited to initial release, translocation, capture, and removal of Mexican wolves if requested by the tribal government. We would seek to continue the cooperative agreement entered into in 2000 with the White Mountain Apache Tribe to allow wolves to occupy the Fort Apache Indian Reservation and we would seek to enter into cooperative agreements for the management of wolves with other tribes within the modified MWEPA. These cooperative agreements would be subject to successive renewal, in which the Tribe has the option of allowing or prohibiting wolf re-establishment, whether through natural dispersion, initial release from captivity, or translocation, on recognized tribal lands or reservations.

- Develop and implement management actions on private land within the modified MWEPA by the Service or an authorized agency to benefit Mexican wolf recovery in voluntary cooperation with private landowners, including but not limited to initial release and translocation of wolves if requested by the landowner. Wolves present on private lands within the modified MWEPA would not be subject to management removal except in the case of depredation incidents or other nuisance behavior that cannot be effectively managed through non-removal techniques.

- Implement a management plan *(Mexican Wolf Management Plan)* for the Mexican wolf for those portions of Arizona and New Mexico that are outside of the modified MWEPA. Under this alternative the proposed management plan would be implemented for those areas of Arizona and New Mexico north of Interstate 40 and south of Interstate 10.

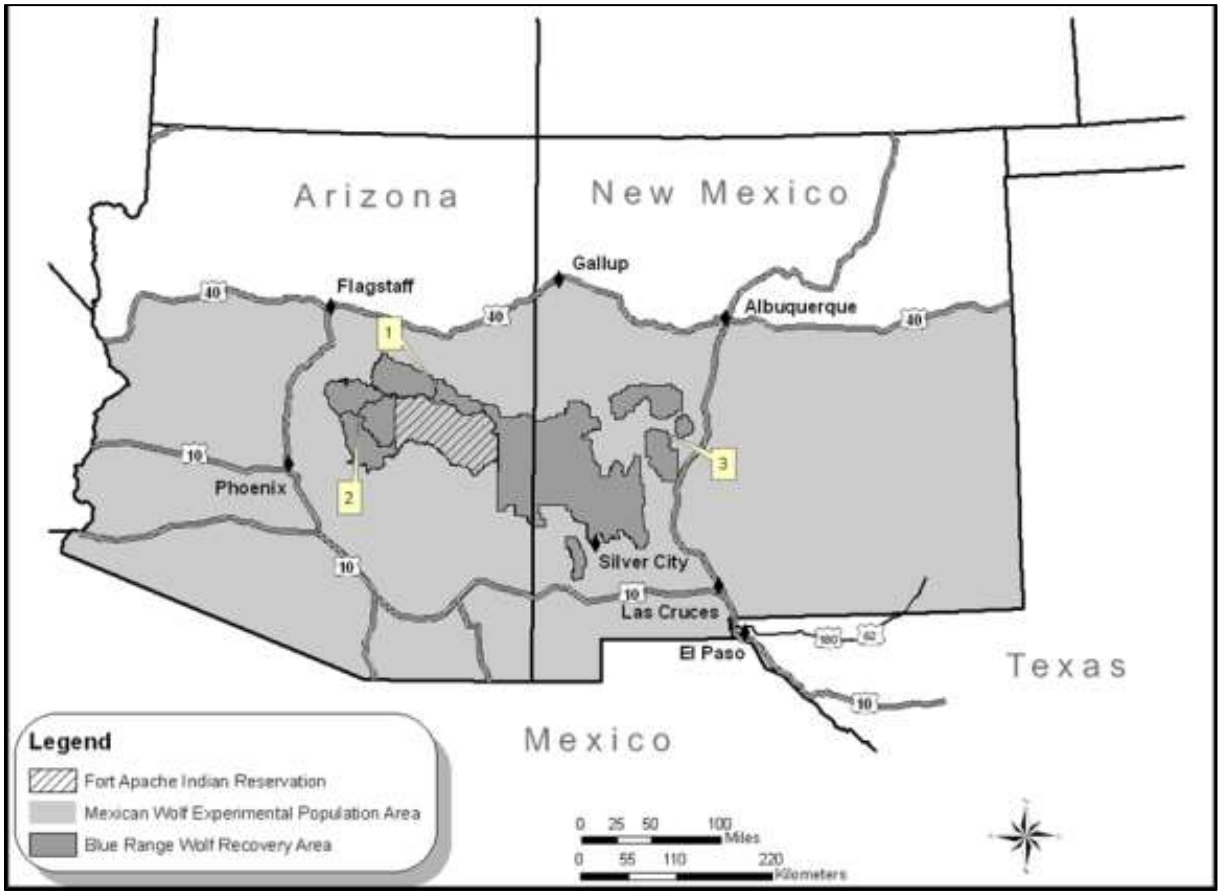


**Figure 2-7. Alternative Four (Comprehensive Alternative) showing the proposed revision to the geographic boundaries for the Mexican wolf that: (1) remove the small portion of Texas lying north of U.S. Highway 62/80 to the Texas-New Mexico boundary from the Mexican Wolf Experimental Population Area (MWEPA); (2) expand the Blue Range Wolf Recovery Area (BRWRA) to include any or all of the ranger districts of the Sitgreaves National Forest (labeled as 1 in the map), three ranger districts within the Tonto National Forest (labeled as 2 in the map), one ranger district within the Cibola National Forest (labeled as 3 in the map); (3) move the southern boundary of the MWEPA in Arizona and New Mexico from Interstate-10 to the United States-Mexico international border; (4) eliminate the designation of the Primary Recovery Zone and Secondary Recovery Zone within the BRWRA; and (5) remove the designation of the White Sands Wolf Recovery Area as an area for the reintroduction of Mexican wolves.**

### 2.3.5 No Action Alternative:

**No changes to the 1998 Final 10(j) Rule for the Mexican wolf would be made and a Mexican Wolf Management Plan for those portions of Arizona and New Mexico not included in the Mexican Wolf Experimental Population Area (MWEPA) would not be implemented.**

Under this alternative the current boundaries of the Blue Range Wolf Recovery Area (BRWRA) and MWEPA and the designation of the White Sands Wolf Recovery Area (WSWRA), as set under the guidelines of the 1998 Final 10(j) Rule, would be retained. The designations of the Primary Recovery Zone (PRZ) and Secondary Recovery Zone (SRZ) within the established BRWRA would be retained and the Reintroduction Project would continue to operate under the current management regulations

which restrict the initial release of captive-raised Mexican wolves to the PRZ of the BRWRA. We would make no change to the management policy that requires that Mexican wolves that naturally disperse and establish territories outside of the BRWRA be captured and returned to the BRWRA or placed in captivity. We would make no change to the provisions of the 1998 Final Rule for the limited take of Mexican wolves. Under this alternative landowners or their agents on private or tribal land anywhere in the MWEPA would not have the authority to take (see the definition of "take" provided in the List of Definitions) a wolf actually engaged in the act of killing, wounding, or biting pets. We would not correct the oversight of the Service which did not identify section 6 of the ESA as potential authorizing language for take pursuant to CFR 17.31 in the 1998 Final Rule nor would we modify the language of the Rule to identify "individuals" (that is, people who are not associated with an agency) as authorized to take Mexican wolves under specific circumstances. We would not eliminate the term "breeding pair" or modify the condition on "public lands" allotted for grazing in the MWEPA, including the BRWRA, for which livestock owners or their agents can be issued a permit under the Act to take wolves engaged in the act of killing, wounding, or biting "livestock" from "6 breeding pairs" to 100 Mexican wolves based on the most recently reported population count. We would not modify the definition of "unavoidable and unintentional take" by clarifying the phrase "due care" as including but not limited to the use of traps that have inside spreads of less than or equal to 6 in (15 cm), double-staking traps, checking traps once every 24 hours, and reporting the capture of a wolf within 24 hours to the Service's Mexican Wolf Recovery Coordinator or a designated representative of the Service. We would not include provisions for the issuance of permits on private and tribal land anywhere within the MWEPA to allow livestock owners or their agents to take any wolf that is present on private or tribal land. While we would seek to continue the cooperative agreement entered into in 2000 with the White Mountain Apache Tribe to allow wolves to occupy the Fort Apache Indian Reservation and we would seek to enter into cooperative agreements with other tribes or private landowners within the currently configured MWEPA we would not seek to enter into cooperative agreements for the management of wolves with other tribes or private landowners within an expanded MWEPA. Under this alternative we would not implement a management plan *(Mexican Wolf Management Plan)* for the Mexican wolf for those portions of Arizona and New Mexico not included in the MWEPA.

### 2.3.6 Summary of Actions by Alternative

In this section we provide a tabular comparison of the actions of the Proposed Action and Alternatives.

| | **Alternative 1 (Proposed Action)** | **Alternative 2 (Expanded BRWRA)** | **Alternative 3 (Expanded MWEPA)** | **Alternative 4 (Comprehensive)** | **No Action Alternative** |
|---|---|---|---|---|---|
| **Boundary Changes** | | | | | |
| *Remove the designation of the White Sands Wolf Recovery Area as an area for the reintroduction of Mexican wolves.* | X | X | X | X | |

| | Alternative 1 (Proposed Action) | Alternative 2 (Expanded BRWRA) | Alternative 3 (Expanded MWEPA) | Alternative 4 (Comprehensive) | No Action Alternative |
|---|---|---|---|---|---|
| *Remove the portion of Texas lying north of U.S. Highway 62/180 to the Texas-New Mexico boundary from the Mexican Wolf Experimental Population Area (MWEPA).* | X | X | X | X | |
| *Move the southern boundary of the MWEPA in Arizona and New Mexico from Interstate 10 to the United States-Mexico international border.* | | | X | X | |
| *Expand the boundaries of the current BRWRA, to include any or all of the Sitgreaves National Forest and the Payson, Pleasant Valley, and Tonto Basin Ranger Districts of the Tonto National Forests in Arizona and the Magdalena Ranger District of the Cibola National Forest in New Mexico. As part of this expansion we would eliminate the designation of the Primary and Secondary Recovery Zone within the BRWRA.* | | X | | X | |
| **Management Changes** | | | | | |
| *Allow initial release of Mexican wolves from captivity to the wild throughout the entire BRWRA. This change would eliminate the need to define the Primary and Secondary Recovery Zone within the BRWRA.* | X | X | X | X | |

| | **Alternative 1 (Proposed Action)** | **Alternative 2 (Expanded BRWRA)** | **Alternative 3 (Expanded MWEPA)** | **Alternative 4 (Comprehensive)** | **No Action Alternative** |
|---|---|---|---|---|---|
| *Allow Mexican wolves to disperse naturally from the BRWRA into the MWEPA and occupy the MWEPA.*<br><br>Note: In these alternatives the MWEPA is modified to remove the small portion of Texas lying north of U.S. Highway 62/180 to the Texas-New Mexico boundary. | X | X | | | |
| *Allow Mexican wolves to disperse naturally from the BRWRA into the MWEPA and occupy the MWEPA.*<br><br>Note: In these alternatives the MWEPA is modified to remove the small portion of Texas lying north of U.S. Highway 62/180 to the Texas-New Mexico boundary and the southern boundary of the MWEPA in Arizona and New Mexico is moved from Interstate 10 to the United States-Mexico international border. | | | X | X | |
| *Manage Mexican wolves in the MWEPA by reducing conflicts with humans and land uses through such means as hazing, trapping, translocations, and removals.* | X | X | X | X | |
| Provisions for take (see the definition of "take" provided in the List of Definitions) of a Mexican wolf are modified to: | X | X | X | X | |

| | **Alternative 1 (Proposed Action)** | **Alternative 2 (Expanded BRWRA)** | **Alternative 3 (Expanded MWEPA)** | **Alternative 4 (Comprehensive)** | **No Action Alternative** |
|---|---|---|---|---|---|
| *- Identify section 6 of the Act as authorizing language for take pursuant to 50 CFR 17.31 for state wildlife agencies with authority to manage Mexican wolves under the nonessential experimental population rule.*<br><br>*- Clarify that an individual can be authorized to take Mexican wolves under specific circumstances.*<br><br>*-Revise the conditions that determine when we would issue a permit to livestock owners or their agents to allow take of Mexican wolves that are engaged in the act of killing, wounding or biting livestock on public lands allotted for grazing from ''6 breeding pairs'' to ''100 Mexican wolves'' to be consistent with our population objective of establishing a population of at least 100 wolves.*<br><br>*- Revise the prohibitions for take such that taking a Mexican wolf with a trap, snare, or other type of capture device within occupied Mexican wolf range is prohibited and will not be considered unavoidable or unintentional take, unless due care was exercised to avoid injury or death to a Mexican wolf.* | | | | | |

| | **Alternative 1 (Proposed Action)** | **Alternative 2 (Expanded BRWRA)** | **Alternative 3 (Expanded MWEPA)** | **Alternative 4 (Comprehensive)** | **No Action Alternative** |
|---|---|---|---|---|---|
| Provisions for take (see the definition of "take" provided in the List of Definitions) of a Mexican wolf are modified to:<br><br>*- Include provisions for take by pet owners of any Mexican wolf engaged in the act of killing, wounding, or biting pets on private or tribal land anywhere within the MWEPA; provided that evidence of a freshly wounded or killed pet by wolves is present.*<br><br>*- Include provisions for the issuance of permits on private or tribal land anywhere within the MWEPA to allow livestock owners or their agents to take any Mexican wolf that is present on private or tribal land and what conditions must be met before such a permit is issued.* | | | | X | |
| **Management Actions** | | | | | |
| *Develop and implement management actions on private land within the MWEPA by the Service or an authorized agency to benefit Mexican wolf recovery in voluntary cooperation with private landowners, including but not limited to initial release and translocation of wolves if requested by the landowner. Wolves present on private lands within the* | X | X | X | X | |

| | Alternative 1 (Proposed Action) | Alternative 2 (Expanded BRWRA) | Alternative 3 (Expanded MWEPA) | Alternative 4 (Comprehensive) | No Action Alternative |
|---|---|---|---|---|---|
| *MWEPA would not be subject to management removal except in the case of depredation or other nuisance behavior that cannot be effectively managed through non-removal techniques.* | | | | | |
| *Develop and implement management actions on tribal land within the MWEPA by the Service or an authorized agency in voluntary cooperation with tribal governments including but not limited to initial release, translocation, capture, and removal of Mexican wolves if requested by the tribal government.* | X | X | X | X | |
| **Implementation of a management plan** | | | | | |
| *Implement a management plan (Mexican Wolf Management Plan) for the Mexican wolf for those portions of Arizona and New Mexico that are outside of the MWEPA.*<br><br>Note: Under Alternatives One and Two the proposed management plan would be implemented for those areas of Arizona and New Mexico north of Interstate 40 AND south of Interstate 10. | X | X | | | |
| *Implement a management plan (Mexican Wolf Management Plan) for the Mexican wolf for those portions of Arizona and New* | | | X | X | |

| | Alternative 1 (Proposed Action) | Alternative 2 (Expanded BRWRA) | Alternative 3 (Expanded MWEPA) | Alternative 4 (Comprehensive) | No Action Alternative |
|---|---|---|---|---|---|
| *Mexico not included in the MWEPA.*<br><br>Note: Under Alternatives Three and Four the proposed management plan would be implemented only for the area of Arizona and New Mexico north of Interstate 40. | | | | | |

**Table 2-1. Summary of Actions by Alternative.**

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